OBITUARY NOTICE[1]

KURT KOFFKA, 1886–1941

On 22 November 1941 the German psychologist Kurt Koffka died at Northampton (Mass.). So passed a fine man. To me he was still more: I am proud to have been his pupil and to have enjoyed his friendship.

For some years Kurt Koffka had been an American citizen. But he remained a good European in the sense of Romain Rolland and Thomas Mann. And he was, also like Thomas Mann, a good German, an outstanding representative of the spirit of the other Germany, a son of that people which was, and still is, and will continue to be, long after the Hitlers have disappeared.

When a physical, or a mental, figure is apprehended, its background is always involved in the act of apprehension—that is the core of the theory to which Koffka devoted his life's work. Figure and background are inseparable. The laws of this unbreakable connexion were first investigated by the eminent Danish psychologist Edgar Rubin, in 1915. This being bound one to another of figure and ground was called *Gestalt*.

In his *Analytical Psychology* (1896), G. F. Stout wrote that "noetic synthesis owes its peculiarity to the introduction of a distinct kind of mental factor, the apprehension of the whole, which determines the order and connexion of the apprehension of parts". But it was the Gestalt psychology that first grasped fully the far-reaching significance of these questions.

Kurt Koffka, together with Max Wertheimer and Wolfgang Köhler, originated the so-called Gestalt theory in psychology, which is ultimately based on the work of the physicist and philosopher Ernst Mach. The cue was given by a famous investigation by Christian v. Ehrenfels on *Gestaltqualitäten*.[2] Ehrenfels started from the problem of musical sounds and also of melody. One can analyse a tonal clang into a fundamental tone with its overtones, but the mere putting of these together again does not result in the clang. There is more in the latter than the sum of the tonal components. In exactly the same way, Ehrenfels realized that a melody is something different from, or even (though this has been disputed) something *more* than, the mere sum of the single notes. A melody cannot be reversed at will without being destroyed, it has a specific structure, which is constituted, not by the mere aggregation of the sensations, but by the relation of the sensations to one another in a definite manner. The melody is a whole, a Gestalt; when it is apprehended as a melody, a 'something' is added to the elementary sensations of tones. Ehrenfels called this the "Gestalt quality". A six-tone melody is more than six different people each hearing one single note of it. The isolated tones do *not* possess 'form quality' by themselves, but they derive it from the melody as a mentally apprehended whole. The character of each contributory part (or rather sub-whole) is determined by all the others and shares in determining their character. A melody, thus, is not a mere random aggregation of notes, but consists of notes related in a quite definite manner.

[1] This paper was read as a memorial address before the Scientists' Section of the Free German League of Culture in Great Britain on 26 April 1942.

[2] *Vierteljahrsschrift für wissenschaftliche Philosophie* (1890), XVI.

The specific characters of the Gestalt remain unchanged if the whole system is altered as one, i.e. if the Gestalt is transposed. Though every single note is now different, the tune itself, the 'form quality', remains intact.

This very fruitful conception was extended by Wertheimer, Koffka and Köhler to 'wholes' of other kinds, passing beyond mere perception, to conscious mental processes.

What is essential and particularly significant in the Gestalt theory can be explained more clearly by showing against what psychological views it combats. The 'bundle', or associationist, theory declared that all complex contents of consciousness are built up by the aggregation of elementary items, constituents—sensations, etc.; they are nothing but a summation, a bundle of such basic elementary constituents. Furthermore: if one psychic item A has frequently occurred together with another item B, it is assumed that the occurrence of A leads to that of B. What is fundamental is the mechanical addition, the mere 'and' relation, the piecemeal method. Over against this the Gestalt theory insists that what is given, is always already configured, articulated, structured in varying degrees, with inherent laws—never constituent 'parts' and nothing more.

If on a hot summer's day we enter a shady wood, we do not experience psychically, (1) trees, (2) moss, (3) coolness and pleasant shadow, etc., etc., but an immediate comprehensive impression, 'wood', in contrast to the previous sun-baked open country. In this impression, the constituent parts (such as the trees, the coolness, the soft earth, the dimness, etc.) are perceived only as parts of the whole and psychically assimilated. And *what* is perceived from the whole varies according to the interest of the observer. It is obvious that the conception 'wood' is one thing to the tired traveller, and a different thing to the forester inspecting his district.

As I have already said, Koffka, Wertheimer and Köhler took up Ehrenfels's idea of the Gestalt quality and, roughly speaking, gave it wide application, but at the same time, in their further elaboration, they abandoned the Gestalt quality as a dualistic concept. In 1912 two fundamental works appeared, Koffka's *Zur Analyse der Vorstellungen und ihrer Gesetze* and Wertheimer's *Experimentelle Studien über das Sehen von Bewegungen*. These established the Gestalt theory on a strong experimental basis. How does it come about that when we view cinematograph pictures, the pictures which are by themselves stationary are perceived as a moving, continuous unity, a coherent, homogeneous, continuous movement? The explanation is that isolated stimuli are not perceived, but the stimuli are merely accentuated points on a ground already existing in the psyche. The so-called stimulus is inseparably combined with the Gestalt-creative process in the act of being perceived. It is not (1) stimulus differential and (2) additive completion by the consciousness. The whole situation is perceived as a unity. The perception cannot be dissolved into a juxtaposition of space and time sensations. It is senseless to consider the parts in isolation, since the alteration of one factor alters the whole.

Rather better known are the experiments on chimpanzees, carried out by Köhler at Teneriffe. These show conclusively that animals take in a situation as a whole, in exactly the same way; that they grasp a new Gestalt, a new situation, (in other words, *learn*) in one sudden act which includes the whole situation. One ape, for instance, was faced with the complicated situation of wanting a banana which was outside his cage. Two bamboo sticks lay for a long time unheeded by him. Each of them was too short. One day, while playing, and quite unintentionally, he fitted them together—and there, in a flash, was the tool by means of which he could easily get the banana. From then on he would never

be in difficulties in a similar situation, but would immediately tackle it with perfect insight.

In other words the whole situation (cage, food, sticks, etc.) had been enriched for him, and had been appropriately articulated for achieving his object. Other examples show how difficult it is to break up existing configurations and grasp their parts as elements of a different whole. Thus one of the apes had learned to use a particular box when he wanted to reach a banana hanging high up. But when he saw one of his fellows lying on it, it did not occur to him to use the box for that purpose. In that configuration the box was to him a resting place, and no longer a means for attaining the banana. But as soon as the second ape quitted his place on the box, the box immediately figured again as a useful tool. To conceive the dry branch of a tree as such a tool appeared to be even more complicated. The Gestalt, 'branch' as part of a specific whole, 'tree', is so strong and compelling that it is not easy to grasp the branch as a tool (i.e. part of a different Gestalt).

Koffka showed the same process to be operative in the mental development of the child. All learning, by children as well as by adults, is a filling out of structures by the inclusion of new elements, a re-definition, a more precise articulation of existing Gestalten, gradations into new and unique forms. It is not by trial and error, by distinguishing between successful and unsuccessful methods, that the child increases its comprehension of the environment, but, so to speak, by suddenly grasping situations.

In 1921 Koffka's book, *Die Grundlagen der psychischen Entwicklung*, first appeared. I should like to outline briefly the most important features of this extraordinarily significant work. What is perceived depends to a great extent on the significance of an 'object' for the perceiving 'subject', on his affective and emotional life. What has no significance is in general overlooked. (Remember the example of the wood.) Koffka shows by the psychic development of the suckling that it is wrong to assume perception of a chaos of sensory impressions—William James's "buzzing, booming confusion"—which get sorted into order in time. In this case "one would expect 'simple' stimuli to be the first to arouse the reaction and interest of the child; because single stimuli ought to be the ones first to be singled out from the chaos for association with one another. This, however, contradicts all our experience.... The first differentiated reactions to sound are aroused by the human voice, the stimuli (and 'sensations') of which are very complicated indeed. Nor is the interest of a suckling aroused by a single colour, but by human faces.... According to the chaos theory the phenomena corresponding to a human face can be nothing but a confused mass of the most varied light-, dark-, and colour-sensations, all in a constant state of alteration—changing with every movement of the person observed, or of the child itself.... Yet the child recognises its mother's face as early as the second month, and in the middle of the first year it reacts quite differently to a 'friendly' face than it does to an 'angry' face." (*The Growth of the Mind*, pp. 133–4.)

In neither human beings nor animals can perception be compared with an avalanche, which, beginning as a tiny ball of snow, carries everything with it, in cumulative manner. Right from the start perception comprises an articulated unit of ideas, as a process containing and forming configurations. To articulate given wholes—in response to a stimulus —means to make ever more precise a structure which already exists, albeit in embryonic form.

Moreover, it might be in line with the conceptions of the Gestalt theory to regard

'things' as also falling under the Gestalt category. Thus Wolfgang Köhler went so far—perhaps too far—as to speak of "physische Gestalten". But is it perhaps possible to go so far as to conjecture a sort of determined line of development in phylogenetic evolution? Certain new and searching investigations of Franz Weidenreich might lead to such an idea; he speaks of an orthogenetic development "influencing every individual system of the body towards a development in the same direction"[1] (i.e. not random mutation and selection).

Experience itself is thus dominated from the outset by a certain order. The human face and its play of expression is certainly not a simple thing, but something very complex. Yet it is perceived and differentiated by the infant at a very early stage. This combination of phenomena out of the environmental field in which each part possesses its peculiar significance *only through and together with* the other parts, was called by Koffka 'structure' or 'Gestalt'.

The Gestalt theory is, in the words of Koffka (*Encyclopedia of the Social Sciences* (1932), IV, 645), "the attempt to find within the mass of phenomena coherent functional wholes, to treat them as full primary realities and to understand the behaviour of these wholes as well as their parts, from whole rather than from part laws. To apply the category of cause and effect means to find out which parts of nature stand in the cause-effect relation. Similarly to apply the Gestalt-category means to find out which parts of nature belong as parts to functional wholes, to discover their position in these wholes, their degree of relative independence and the articulation of larger wholes into sub-wholes."

When a given situation has once become structurally familiar, then on recurrence it is always experienced as a whole, even if not all the component parts are present. The missing part is taken for granted, or is filled in. Consider our perspective vision; normally speaking, nobody hesitates even for a moment to sit on a chair of which he cannot actually see all four legs.

To come back to the fight against associationism: the refutation of the chaos theory (i.e. that in psychic life progress is from the simple to the complex), that what is simplest for the reason does not come first in psychic experience, has many parallels in the history of science. Thus, for example, in investigating the development of human groups, whether state, economic, or family organization, the succession of forms was again and again thought of as springing from a simple, primary form with the gradual addition of this or that factor. From the primitive horde, by way of the despotism of chieftains or priests up to the modern organized state, or from the simple self-sufficient family economy, by way of the town as economic unit to the national or even world economy; from the digging stick to the motor-plough; from unregulated promiscuity by way of polygamy to monogamy, etc.: such primitive forms which are supposed to have been simple, elementary, have never been known in history. What exists at the initial stage of an evolution is already itself a complex whole, an articulated compound, not essentially different in respect of its formal structure from the later forms.

Of the triumvirate, Wertheimer, Koffka, Köhler, who created and elaborated the Gestalt psychology in closest collaboration, it was Koffka who gave it its most comprehensible, most elaborated form. I have attempted to depict the thought in which Koffka

[1] "The dentition of *Sinanthropus Pekinensis*, a comparative odontography of the Hominids." *Palaeontologia Sinica*, New Series, I, 2 vols. Geological Survey of China—Peking (1937).

lived and for which he worked, and to outline his particular achievement. But I must admit that the scientific and personal ties between the three men were so close that it is very difficult without entering into a very detailed analysis to discover which of the threads were spun by any one of them. Moreover, Koffka was not at all inclined to put his merits in the foreground. On the contrary, highly modest as he was, he used to lay far more stress on the achievements of Wertheimer and Köhler.

The initial impetus was given to the Gestalt psychology by the psycho-physical investigations of Ernst Mach. The Gestalt theory combats all purely mechanistic interpretations of the universe, as he did. Koffka found himself actually very near to the position of Whitehead. Although Koffka acknowledges certain of Driesch's viewpoints, his Gestalt category belongs to the critical anti-vitalistic attitude, and is distinguished from all other 'Ganzheits' theories by its rigid anti-dualism. A more detailed account would have to analyse the most complicated 'isomorphistic' solution of the so-called psycho-physical problem envisaged by the Gestalt school. But I must omit the discussion of this very important aspect of the Gestalt theory, the whole theory of 'traces', and the introduction of the particular 'Ego' concept of Koffka, together with its philosophical implications; a reasonably adequate discussion of this highly controversial matter would require a special treatise.

The method of the Gestalt theory has found particularly interesting application by Ruth Benedict, a pupil of Franz Boas. In her book *Patterns of Culture* (1935), she applies it to whole cultures. She took three well-investigated cultures, that of the Pueblo of the upper Rio Grande, that of the Melanesian Dobu, and that of the Kwakiutl Eskimo, and she showed that "a culture like an individual is a more or less consistent pattern of thought and action. Within each culture, there come into being characteristic purposes not necessarily shared by other types of society. In obedience to these purposes, each people further and further consolidates its experience, and in proportion to the urgency of these drives, the heterogeneous items of behaviour take more and more congruous shape. Taken up by a well-integrated culture, the most ill-assorted acts become characteristic of its peculiar goals, often by the most unlikely metamorphoses.[1] The form that these acts take, we can understand only by understanding first the emotional and intellectual mainsprings of that society.... The whole... is not merely the sum of all its parts, but the result of a unique arrangement and interrelation of the parts that has brought about a new entity" (*loc. cit.* pp. 46–7).

The items of a culture are thus determined by the whole, by the 'pattern'. And since these 'patterns' differ, the single elements will obviously differ too. Long before Ruth Benedict's work, the fundamental differences excited the particular interest of the French sociologist L. Lévy-Bruhl, to whom belongs the merit of having discovered that certain mental processes which we have naïvely assumed to be quite universal are certainly not so.[2] This involves, of course, certain epistemological implications; and I should not hesitate to say that the views of Lévy-Bruhl, extremely fruitful though they have been for a proper understanding of primitive societies, can hardly be justified on the plane of epistemology. As an example of Lévy-Bruhl's sound points I may mention the process of counting. Primitive peoples do not have our abstract system of reckoning but they are

[1] This process had been dealt with from the psychological side by F. C. Bartlett in *Remembering* (1932), p. 275.—W.E.

[2] *Les fonctions mentales dans les sociétés inférieures* (1910).

nevertheless able to calculate accurately in matters relevant for their life, so, for example, in regard to distances, quantities of grain, etc., within their own frame of reference, a stone's throw away, a bowshot away, a handful, a calabashful, etc. Relevance is decisive, structural relations—that is the keynote.[1] In this connexion I may perhaps recall that even among regional sub-groups of one and the same culture even of our European culture, variations of classification and enumeration occur. Thus the Englishman has not ten, but eight fingers—and two thumbs.

Lévy-Bruhl's theses have remained one of the most discussed themes of cultural anthropology of to-day.[2] Not incidentally, my first acquaintance with Lévy-Bruhl was not at lectures on ethnology, but was conveyed to me by Kurt Koffka.

The reader will understand, and I trust he will forgive me, if as anthropologist I have laid somewhat great emphasis on some of the relations (there are more) of the Gestalt psychology to cultural anthropology. For a special reason, however, I must dwell on this yet a little longer. In the year 1932 Koffka was invited by the U.S.S.R. State Institute for Psychology to undertake ethno-psychological research work in Uzbekistan, together with a number of American and Russian scholars. Koffka set out for that part of Central Asia on the upper reaches of the Amu-darya and the Syr-Darya, the Oxus and Iaxartes of the ancient Greeks, with the intention of making a thorough study of the mentality and the intelligence of the so-called primitive Uzbeks. It is certain that the test methods worked out by Koffka would have proved most valuable for ethno-psychology; these test methods differ fundamentally from the usual intelligence tests in that they use as their touchstone life itself, the whole environment. Scarcely, however, had he arrived at the research field and begun his work, when he was taken seriously ill, and had to be brought back. A tragic end was thus set to this research activity of Koffka's. The consequent loss to the science of ethnology is a matter for the deepest regret.

I have endeavoured to draw an outline of Kurt Koffka's intellectual activities; now I should like to say a little about his personality and the facts of his life.

He was born in Berlin on 18 March 1886. He grew up in a home with a lively intellectual atmosphere, and he himself at an early age had literary and philosophic interests. In 1903, when he left school, he was a devoted admirer of Kant, Nietzsche and Richard Wagner. This was the period, as is well known, when Wagner was flourishing in the German home. Later, Koffka turned away from Kant, and got over Wagner, the musician of the Bismarck period. What remained was an intense love of music. In passing, I may mention that he later had close personal and intellectual relations with the musicologist, Erich v. Hornbostel. Koffka first studied philosophy at Berlin with Alois Riehl, but before long, in 1904, he went to continue his studies at Edinburgh. During his stay there something happened which had a decisive bearing on his whole life: under the influence, possibly, of the English aversion from idle speculation, he turned to psychology. In 1908 he took his doctor's degree at Berlin, under Carl Stumpf, and here also he met Max Wertheimer, with whom he was linked in life-long friendship. 1909–10 found him at Würzburg where he continued his studies in psychology as assistant to Oswald Külpe and Karl Marbe. In 1910–11 he taught at the then existing Academy at Frankfurt a.M.

[1] Max Wertheimer comes to similar conclusions in an article "Das Zählen der Naturvölker" in *Zeitschrift für Psychologie* (1913), LXVI.

[2] To mention only a few outstanding criticisms I should name R. Allier, F. C. Bartlett, J. H. Driberg, S. Hofstra, O. Leroy. Cf. also my article on "Death and Immortality in the Beliefs of Primitive Peoples", *Man* (1939), XXXIX.

In 1911 he became a lecturer at Giessen on the strength of the before-mentioned paper, "Zur Analyse der Vorstellungen und ihrer Gesetze". He remained in Giessen until 1927, from 1919 onwards as Assistant Professor. In 1924 he accepted an invitation as visiting Professor at Cornell University, Ithaca, U.S.A., and in 1925 a similar invitation to Chicago, and later to Wisconsin, but returned once more to Giessen.

While at Giessen he wrote his principal work, *Die Grundlagen der psychischen Entwicklung*, a not at all voluminous book which appeared in 1921 and made his name famous, being translated into English (1925), French, Spanish, Russian, Chinese, and Japanese. It was popularly referred to as the "Child Psychology", simply because it dealt with the development of the psychic processes, and especially the process of learning in earliest childhood.

In Giessen I became acquainted with Koffka. I still remember clearly how, when the "Child Psychology" appeared, the petty bourgeois and 'flappers' of both sexes and all ages ridiculed the book: "Heavens, *that* aesthete, with no children of his own! What can he know about dealing with children? What can he have to say?" True, Koffka was an aesthete, but not a bourgeois; an aesthete, but nevertheless a man of the people; a man of the world, yet of unquestionable sincerity. At ease in society, nevertheless open to all new ideas.

The musical evenings at Koffka's home were very greatly appreciated by us students, or rather those students who were not simply studying for examinations. It was a meeting place for students, artists, and scholars. We read Christian Morgenstern together. In Ibsen and Scandinavian literature Koffka had been intensely interested since youth. There were discussions about Stefan George—to name just a few things. Koffka was distinguished by his hospitality and generous care for his students. It was no mere accident that his students became closely linked among themselves by a bond which in most cases still holds to-day although they are scattered in different continents. Late one evening I was with one of our circle, and had the impression that, in complete despair, he had decided to take his life. I had no doubt as to what I ought to do—go to Koffka immediately. I arrived at Koffka's place at about midnight; immediately he came to our friend, whom he won back in the course of a long talk. Unhappily our friend later, though indirectly, fell a victim to the Nazis.

As an academic teacher Koffka was a really attractive force for Giessen. Many foreigners and students of other faculties, especially medical students, sought him. His teaching activity was extraordinarily intense. He developed new and most fruitful experimental methods, and had them applied in really valuable theses for doctorates. His lecturing was extraordinarily stimulating for us students and others who attended them. No one was ever more true to the saying: *Amicus Plato, magis amica veritas.* In the seminar discussions he was liable to press one hard; he was no forbearing examiner. And, thoroughly kindly and lovable as he was, he was capable of using severe words against those who hid their ignorance or incompetence under a cloak of arrogance. I have mentioned that in addition to his scientific interests he retained all his life an interest in art. But there was one other thing that meant very much to him; travelling, especially mountain tours; he was an outstanding Alpinist. It is possible that this physically delicate man had at a comparatively early age over-exerted himself in mountain climbing; in any case it is certain that he suffered from heart trouble for a number of years.

A good deal of boyishness stayed with him all through his life. In contrast to his

dignified fellow-professors, he enjoyed harmless pranks, even when carried rather far. One summer evening when we were coming from the baths it occurred to us to go along to his place in all sorts of possible and impossible masquerade, with towels as turbans, etc. Arrived there, we found ladders and scaffolding left by craftsmen, and by this means we clambered up to his balcony on the second floor, and appeared all of a sudden as ghosts at the window of that room where, as it happened, a party was going on. The grave gentlemen were shocked. Koffka, however, joined in laughing, and gave us a meal.

Koffka was a highly independent and unprejudiced thinker, in the political as well as other fields. When after the assassination of Walther Rathenau the Reichsbund of avowedly Republican teachers was founded by Professor Ludwig Hüter, Koffka immediately joined it. He liked Giessen, and he loved Würzburg. To the Giessen period also belongs the founding of the highly valued periodical, *Psychologische Forschung*, by the three Gestalt psychologists. Koffka was its editor until 1935. But in spite of his achievements and his international reputation—he had been elected an Honorary Member of the British Psychological Society and Membre Associé de la Société de Psychologie Française—his assistant professorship was not converted into a full professorship by the then Hessian Government, for incomprehensible, or shall I say, for obvious reasons. In short, Koffka found the opportunities for developing his activities too restricted in Giessen, and he, therefore, decided in 1927, not without regrets, to go finally to America. Koffka accepted an invitation to the University of Northampton (Mass.), at first for five years, as William Allan Neilson Research Professor, but in 1932 this post was converted into that of a permanent Professor of the Faculty. As I have said, it was with regret that he decided to leave Germany. It was the vigour of the New World and the generous manner in which scientific work was encouraged there, that ultimately compensated him for much that he loved in the science and cultural tradition of Europe.

Two aspects of American life made a strong impression on him. The contempt of the Negro race—the colour bar—horrified him. The freshness and the urge towards education of the American workers gave him great pleasure. Thus, when passing through an industrial town, he received a quite unexpected visit at his hotel from a workers' official, who asked Koffka to lecture to his comrades about his researches. He immediately consented, and that evening had the unusual pleasure of addressing more than a thousand workers.

In 1932 came the invitation to join the expedition to Uzbekistan. Perhaps he never completely recovered from the illness which he was taken with there. Just at the outbreak of war he had read a paper on "The Ego in his World" at the meeting of the British Association for the Advancement of Science, at Dundee. I saw him for the last time a few months later at Oxford, where for a year he studied the structural reconstruction of the environmental field after brain lesions or brain operations, at the Nuffield Department of Surgery. In the summer of 1940 he returned to Northampton and set himself to the elaboration of his studies at Oxford.

To quote the obituary of the Northampton University: "Those who knew him or worked with him had that rare experience of meeting a mind of real originality in combination with the quiet, unobtrusive modesty of the true scholar."

To a small circle Kurt Koffka, the man, will remain a cherished memory. The name of the scholar has already been inscribed in the annals of science.

WALTER EISEN.

THE NATURE AND METHOD OF PSYCHOLOGICAL INQUIRY

By the late G. DAWES HICKS

I. *Knowledge and the process of knowing* (pp. 77–78). II. *Psychology as a science* (pp. 78–81). III. *The subject-matter of psychology* (pp. 81–83). IV. *The standpoint of psychology* (pp. 83–86). V. *The aims and methods of scientific psychology* (pp. 86–90). VI. *Psychology and philosophy* (pp. 90–92). *References* (p. 92).

I. Knowledge and the process of knowing

Over fifty years ago T. H. Green, having in view the systems of philosophical empiricism which at that time were prevalent in England, raised the fundamental question: Can there be a Natural Science of Man? In doing so, Green was, it is true, mainly concerned with ethical problems and with the cardinal principles of moral life and conduct. He was primarily intent upon showing that if the life of a human agent be regarded as a part or product, even though admittedly a very remarkable part or product, of nature—understanding by the term 'nature' the sum total of things and events which may be treated in thoroughly objective fashion—and if, in attempting to explain human action, there be applied those mechanical notions by the help of which the things and events of nature are rendered intelligible, the distinctive character of what constitutes the essentially moral factor in experience receives in no way either elucidation or even proper recognition. No mere account of the way in which we happen to come by our moral ideals will ever yield a satisfactory *rationale* of those moral ideals themselves. But Green pursued a similar line of reflection with reference to the cognitive side of our being. Nothing, he maintained, can be determined respecting the real essence of knowledge by tracing the manner in which states of consciousness, considered as mere events or occurrences in our mental history, succeed one another, or even by noting the stages of growth in knowledge exhibited in the life history of an individual conscious subject. Knowledge, although it may be knowledge *of* events, cannot *itself* be an event or a series of events; knowledge is always knowledge of related facts, and these related facts must be together present to consciousness, if there is to be knowledge of them. If, then, the experience of related objects forms and must form a connected whole or system, the consciousness that experiences can only be conceived as itself possessing a corresponding singleness of being, and is not to be pictured as a stream of states or processes.

Consequently, Green concluded that both knowledge and morality presuppose as the ground of their possibility an ultimate spiritual principle or self-determining consciousness—a principle or consciousness that cannot be explained by any natural history, properly so called, simply because it has had no natural history. For it is not, so he contended, a product of any series of events, nor does it arise out of materials other than itself. It is, in short, *sui generis*, not a temporal process in any sense, and, so far from its being in time, time itself depends upon it as its pre-condition. At the most, what could be dealt with from the point of view of natural science would be the events or processes which this ultimate principle of consciousness makes use of as its vehicle. Psychology, that is to say, considered as a natural science, would resolve itself into a department of physiology, seeing that the events or processes in question would be organic or bodily events or processes.

I am not, of course, intending to enter here upon a discussion of Green's metaphysical conception of consciousness. For reasons I have set forth elsewhere, the notion of a timeless self-consciousness seems to me to be a contradiction in terms. But it is perhaps worth while pointing out that even though Green's arguments in favour of the position in question were more successful than I conceive them to be, it would not at all follow, as he apparently thought it did, that the finite individual consciousness is likewise non-temporal or timeless in character. Green was especially desirous of driving home his contention that the material processes of nature themselves imply, as the condition of their existence, the being of a non-material and non-temporal spiritual principle. Yet, even if an ultimate spiritual principle that is not in time be held to be a necessary postulate to account for the processes of material nature which are in time, what ground would there be for refusing to recognize that this principle may likewise render possible processes of a psychical or mental nature which are also in time? Whether or no there are such temporal mental processes would be a question for empirical research to determine; and Green's metaphysical theory would, so far as I can see, afford no presumption one way or the other.

II. Psychology as a science

Even a cursory inspection is sufficient to convince us that knowledge, which from the epistemological point of view is apt to be regarded as a systematic whole, presents from the point of view of the individual knower the aspect of constant change and alteration. Nowhere more manifestly than in the mental life do we find evidence of ceaseless movement. There is a certain stability and possibility of repetition in the objects of external nature which we do not meet with in the corresponding realm of mind. There all is in a condition of incessant process and becoming. Even that which we describe as the identity and continuity of the conscious subject in no way precludes the greatest amount of transition in all the several portions and stages of the individual's career. As with life biologically regarded, so with mental life, but in more considerable measure, its history is that of continuous growth and development. Obviously, what we call our stock of ideas increases with the advance of our experience; the range of our knowledge, that is to say, is constantly expanding both in volume and in extent. Not only so. As we shall see more fully further on, the growth and development in question do not come about by any merely mechanical aggregation. In these successive phases there is involved real modification in the ways in which the individual mind apprehends the world of objective fact. Each stage of mental activity is what it is largely in consequence of the stages that have preceded it. We have, that is to say, to conceive of individual minds as becoming, through the varieties of their experiences, modified in countless ways and as, therefore, reacting in a new and more complex fashion upon each fresh experience.

Without going to the extent of saying that "it is the sole and whole business of the psychologist to trace the history of the conscious life of the individual subject" (1), it may safely be asserted that it is the fact that the conscious life of the individual subject has a history which furnishes the *raison d'être* of psychology as a distinctive branch of scientific investigation. Green and his followers were simply confounding the knowing consciousness with the content known; or, at least, failing to draw a distinction between them. The knowledge which the mathematician has of a proposition in Euclid is doubtless, as Green expressed it, a knowledge of certain relations between specific parts of the figure,

and of these relations in so far as they are truly known it may be affirmed that they are unalterable, the same at one period as at another. The proposition is not affected by the circumstance that *A* knew it yesterday, *B* knows it now, and *C* will know it tomorrow. But, although all this be granted it justifies not at all the conclusion that the act of apprehending the truth referred to is not an event in the history of the mind that, at a particular period, is apprehensive of it. While, then, the content known may not be an event in time, it is clearly illegitimate to infer that the apprehending of this truth is as timeless as the truth itself. "How," Prof. Dewey once asked, "how can the consciousness which in its primary aspects exists as a series of psychical events or states be the consciousness for which a permanent world of spatially related objects, in which all sentient beings participate, exists?"(2) Why should it not be? What is there in the temporal character of mental acts to preclude them from being the means by which the conscious subject becomes aware of that which is permanent? It is only in consequence of our inveterate tendency to suppose that the 'states' or 'events' in question must needs be conceived after the fashion of discrete and separate units that the supposed difficulty arises. As we shall have repeated occasion for noting, our experience of mind affords no warrant whatsoever for the assumption that under any circumstances these 'states' or 'events' are independent entities capable of occurring in isolation. The very reverse is at once suggested by any analysis we may attempt of the course of our inner experience. Taken collectively, that inner experience resembles rather a continuous process than an aggregate of independent parts. In this process we can, it is true, discover distinctions of qualitative and other aspects, but what is thus distinguished ought not to be pictured as susceptible of having a separate existence. Psychical states are always, in other words, states *of mind*, and this qualification is exactly what cuts the ground from under any form of what may be called psychical atomism.

Whether psychology is rightly describable as a 'natural science' depends entirely upon the significance attached to the designation 'natural'. If the term 'nature' be used in an all-inclusive sense to denote the universe in its entirety, then certainly minds are comprised therein, and psychology is no less a 'natural science' than chemistry or astronomy. But it is more customary to look upon 'nature' as denoting the sum of interrelated objects with which physical science is concerned. And in that case psychology would be wrongly characterized as a 'natural science'. There is always involved, namely, in any adequate conception of the mental life the implication that, however varied may be the activities or transitory states entering into it, each and all of them can be understood only as the activities or states of a subject, in some way and to some degree aware in and through them. The characteristic here indicated in a general way is certainly not one that can be brought before the inquirer in the emphatic manner in which the appearances of external things are brought before him. Nevertheless, no idea of what is signified by it can be formed at all without the recognition that it forces to the front an unmistakable contrast between mental facts and the facts belonging to the objective sciences. Not seldom one finds the total difference in kind between the facts of physical nature and those of the mental life contemplated as though the difference were one of direct observation, as though the facts were, indeed, on the same level but simply distinguished from one another by our inability of conceiving a transition from the one order to the other. Now, the characteristic of the mental life just mentioned altogether precludes us from viewing as even a possible hypothesis a transition from physical phenomena to the facts of the

inner life. What is peculiar to the inner life—that each phase of it is related to a subject that in some way is aware in and through such a phase—entirely differentiates these facts from the facts of the physical world. It compels us to recognize in psychical facts a unique double-sided aspect, as contrasted with which the facts of outer observation would seem to exhibit a singleness of appearance, so that it is theoretically, at any rate, conceivable that the latter might present to an observing mind all that is characteristic of them.

Let us, then, provisionally define psychology as the science of mind or of the mental life. Perhaps the latter is the more appropriate term. It is advisable, namely, to avoid the implication which may lurk in the term 'mind' that we have to do with a substantive existent in some way differing from, and, it may be, independent of, its passing states or experiences. Moreover, since in our descriptions and attempted explanations of mental facts, we are compelled to employ metaphorical expressions that apply strictly to the outward world, it is important to select those expressions which are most in keeping with the nature of the material with which we are concerned. We tend, for example, repeatedly to speak of a 'mind' and of the ways in which it is exercised or affected after much the same manner in which we speak of a 'thing' and of its affections and relations to other 'things'. And, unless we scrupulously guard ourselves, the very force of the terms we are employing is well-nigh certain to lead us into downright error. By using the term 'mental life' we make, at all events, the effort to describe the individual mind not as a 'thing' or substantive entity, but as a connected and continuous flow of successive experiences. An activity or a life—by these phrases we may indicate with some degree of accuracy the feature which has to be kept prominent in our consideration of what we call a mind.

The conception of the mind as a continuously developing mental life stands, in truth, in much more decided antithesis to the theory of the mind as a collection of mental states than does the conception of a subject as distinct from those states and as somehow affording a bond of union among them. For the latter conception results from conceding Hume's point that mental states would be "entirely loose and separate" did they not "inhere in something simple and individual", whereas the former conception amounts to a distinct repudiation of that contention. A continuously developing mental life and a mechanical aggregate of parts present probably the strongest contrast discoverable within our world of real existence. It is, therefore, one thing to say that the conscious subject *is* its states; it is quite another to say that a sum of states is the conscious subject. If it be an error to describe a living organism as biologically an aggregate of living cells, one might expect it to prove a still graver error to describe a living mind as an aggregate of psychical units. And, if it be asked what more is the mind than such an aggregate, the reply is that, since it would have to be an aggregate in order to be also something more, the question is meaningless. At each stage of its development, a conscious subject is, in other words, an organic unity, a unity which develops as a unity and which the several changes as they occur differentiate and render more complete and real. A mental life is *one*, not as an aggregate of separable parts, but as exhibiting a series of internal changes of the subject that experiences in and through those changes. The conscious subject is an *individual* subject because its nature is such that in all its several states or phases it is aware of itself, aware of itself not necessarily by any means *as a self*, but aware of all it is aware of in a manner which we, for want of a better expression, can only describe as a mode of "being for self". From the point of view of the experiencing subject, there is a

unity of awareness which indicates a oneness of nature on the part of the mind in question. That, however, does not mean that the mind is first made and then provided with material of which to become aware. It means, rather, that the process of the mind's formation is a process of getting such material, a process of the developing apprehension of objects. Accordingly, we are entitled to assert with Adamson(3), p. 58), on the one hand, that the self-consciousness of mature experience could never have arisen if the primitive and rudimentary states of mind had not, as essentially belonging to them, this obscure self-reference; and, on the other hand, that neither the primitive nor the matured self-consciousness indicates a factor distinct from the mental states themselves.

III. The subject-matter of psychology

It will be helpful to dwell briefly here upon a view of the nature of psychological material, a view which is certainly deserving of due consideration. In an able article, written in 1909, Prof. G. E. Moore maintained "that psychology has a special subject-matter of its own; and that this subject-matter may be defined by saying that it consists of all those among the contents of the universe, and those only, which are 'mental' or 'psychical' in their nature"(4). The important question thus confronts us whether a science of mind is necessarily confined to those entities which are rightly described as 'mental'. Or, more explicitly, if there are non-mental factors that play a more or less conspicuous part in the development of the mental life itself, ought not these, in so far, to be included in the subject-matter of psychology?

In the article referred to Prof. Moore vindicated in a striking manner the distinction, which will call for detailed treatment in a subsequent section, between an act of consciousness and that of which through such an act there is awareness. The clear recognition of that distinction is, as we shall see, an essential requisite for the successful handling of psychological problems. The psychologist who has once realized its import will find himself absolutely deterred from entertaining as even a conceivable view of the function of his science that of which, for example, Münsterberg was probably the most prominent exponent. Consciousness, from the psychological standpoint, means, according to Münsterberg, only the general condition for the existence of psychical objects or contents; all variations of consciousness are variations of content, which must be analysed without remainder into elements that are theoretically co-ordinated with the elements of presentations, that is, with sensations; presentations and their elements can alone find a logically satisfactory description in psychology. So regarded, psychology is, it is true, held to be from the necessity of the case an abstract and purely descriptive science; the inner life that forms the material of its treatment, is avowedly not the actual inner life, but an artificial reconstruction made by scientific thought for the purpose of grasping a group of psychical phenomena as a causal system. The subject-matter of psychology is represented, that is to say, as consisting of contents of consciousness considered in abstraction from consciousness; and these, it was maintained, can be dealt with as objects, and be resolved, as physical objects can be resolved, into their elementary components. But to attempt thus to build up a science of mind by first of all eliminating from its province the distinctive characteristic of mind is tantamount to courting disaster at the start. Contents, so regarded, come to be looked upon as just things, and the *apprehension* of things has been in no wise brought within the scope of scientific treatment by the mere device of describing such things as psychical. They are certainly not psychical in the sense

in which the apprehension of them is psychical. A simple illustration will perhaps serve to make the point clear. Suppose it be said that one idea is suggested by, and tends to combine with, another which resembles it. Then, even though it be assumed that this similarity is able to operate as a force and to bring together two ideas—an assumption which it will be found hopeless to try to understand—yet the problem of how there comes to be *recognition* of similarity or resemblance in what is in such a case apprehended has not been thereby so much as remotely touched. As against the doctrine which Ward christened 'presentationism' (5), pp. 23, 70–1), we may then at once assert that the distinction between an act of consciousness and that of which there is consciousness is a distinction which the psychologist can ignore only at the cost of entirely misconstruing the facts with which he is called upon to deal.

Distinction does not, however, necessarily imply complete separation; and in sharply severing the act of apprehending from what is apprehended, we may unwarily fall into an error which is, in a sense, the counterpart of that exemplified in 'presentationism'. If mental acts be conceived as not differing from one another internally in so far as they are directed on different objects, but only in so far as they are different modes of consciousness, and Prof. Moore seemed to think this probable, then little else would appear to be left for a psychologist to do than to assign these acts to their respective headings—to treat each act, that is to say, as a mode of exercise of some one of the specific 'powers' or 'faculties' with which, in that case, the mind would be held to be endowed. Attempts to reinstate the old faculty psychology have, indeed, been made in recent years; but, as we shall see, the reinstatement would mean the abandonment of psychology as a scientific pursuit. How can a mental process be made intelligible by being referred to a 'faculty'? The so-called 'faculty' is nothing else than a repetition in a single word, and in the very abstract notion of a 'power', of the facts that are being dealt with; and if these are not intelligible in themselves, they certainly do not become intelligible by being attributed to a 'faculty'; the notion of the 'faculty' is just abstracted from the special facts for which it is supposed to account.

It is more particularly with reference to what Ward designated 'presentations of sensory objects' or what Moore calls 'sense-data' (colours actually seen, sounds actually heard, etc.) that the issue we have now before us can perhaps best be made clear. When Moore wrote the article referred to he was extremely doubtful whether 'sense-data' could be rightly conceived to be mental. But it would not in the least follow, as he thought it did, that if these are not mental entities they do not belong to the subject-matter of psychology. For let us meanwhile assume, what later we shall show reason for holding to be the fact, that, when we perceive, we perceive or attend to objects, and not to sense-data or presentations of objects. In that case the presentations or sense-data, as distinguished from actual things, must not be thought of as objects, stationed out there in the objective world as duplicates of physical bodies, and waiting to be apprehended. On the contrary, they will not themselves be existent entities; they will be appearances of the characteristics of existent things, ways in which those characteristics are for the time being grasped, in more or less fragmentary fashion, by a conscious subject. As such appearances, they will obviously be partially dependent upon the apprehending mind; but this partial dependence in no way justifies the description of them as mental or as being "in the mind".

Nevertheless, although not mental entities, the very fact that they are partially dependent upon the mind entitles us to regard 'presentations' or 'sense-data' as forming

part of the subject-matter of psychology. They are, so to speak, ways in which the mind participates in what is other than itself, and through such participation is a mind at all. What gives to the act of perception its concreteness and definiteness, what enables its character as an act to be dealt with and described, is just the variety of sensuous content with which it is connected. We should be, therefore, to say the least, in an awkward predicament as psychologists if we were constrained to view the perceiving act as forming part of our subject-matter whilst the perceived content did not. Even though they be not mental entities, yet these perceived contents are factors involved in the development of mind—mind, at any rate, as we know it—no less essentially than those entities which no one would hesitate to describe as mental. The view of psychology as having its subject-matter restricted to entities that are mental in character is based, so we may venture to urge, upon a mistaken conception of the nature of a mind and of its modes of operation. That nothing can influence the life of mind or play a part in its development which is not, in essence, akin to the essence of mind as an existing reality was the tremendous assumption of speculative idealism. "We forget", as Adamson once said, "that mind is not an abstraction, that it lives only in and through its concrete expression, and that what we thus represent as the product of mind might just as fairly be said to be the very making of mind" ((3), p. 18). In other words, the mind is not a little self-supporting system, which would be what it is were all else blotted out and there were nothing beyond it to experience. The mind is, indeed, a system, a microcosm if you will, but it is so because it lives in the large world, the macrocosm, and is cognizant of its features.

Accordingly, we may conclude that whatsoever plays a part in the development of the mental life is legitimately enough to be regarded as falling in so far within the province of psychology. And, if it be true that those sensuously apprehended contents which are the ways in which the external world is known by us are not mental in character, then, in including them as, in a sense, products of mind, within the province of psychology, we shall, in fact, be doing no more from the start than what is ostensibly being done in those departments of research that have recently branched out from what used to be considered as alone the domain of the psychologist. By observation of what may be called collectively the products or the expressions of the mental life (including therein all that falls within the wide range of human culture), psychologists have been throwing no small amount of new light upon the constitution of the human consciousness and the various phases of its evolution. In short, it seems inevitable, from the very nature of mind and of its function as apprehensive of reality, that in the subject-matter of a science of mind very much will call to be included besides the entities which can properly be described as mental entities.

IV. The standpoint of psychology

We seem, then, to be brought to Prof. Ward's position that psychology is more accurately defined by the standpoint from which experience is viewed than by reference to a special subject-matter. And so doubtless we are, but not necessarily to that position as carrying with it all the implications which he held it to entail. In terms that have become sufficiently familiar Ward declared that "as presented to an individual, 'the whole choir of heaven and furniture of earth' may belong to psychology, but otherwise they are beyond its scope" ((5), pp. 27–8). In the original *Encyclopaedia* article presentations were spoken of as "mental facts" (6); but it is noteworthy that in the later work this phrase was discarded,

although presentations were still called "psychical objects" ((5), p. 46). But Ward wanted, I believe, in the *Principles* to avoid any suggestion that, because they are 'in the mind' in the sense of being present to the mind, presentations are necessarily mental in nature. He wanted, I take it, to regard presentations, from an epistemological point of view, as appearances to the subject experiencing them of external realities, while insisting, at the same time, that the being and character of such appearances were in part dependent upon the being and character of the experiencing subject to whom they are presented. Nevertheless, in speaking of these appearances as themselves 'objects,' and in distinguishing them, as the facts attended to, from what he designated 'trans-subjective objects', Ward was virtually ascribing to them a mode of existence, separable alike from that of the apprehending subject and from that of external things. Now, the moment that separation is effected, the 'appearance' or 'presentation' comes inevitably to occupy the position of a *tertium quid*; and at once the manifest difficulty arises as to how we can ever be said to perceive 'trans-subjective objects' at all. To this objection it will not do to reply, as Prof. Stout once did, that the terms 'presentations' or 'objects' are simply employed "to indicate things in so far as they are apprehended by individual minds" (7). Whoever tried consistently to put that interpretation upon these terms would very soon find himself at an *impasse*. For instance, while 'presentations' (there being included under this head "sensations, movements, percepts, images, intuitions, concepts") are declared not to be "subjective modifications", they are yet spoken of as subjective in the sense that it is the subject that 'has them'; and, although regarded as distinct from the "I", they are yet looked upon as constituents of the "Me". And as such they are represented as capable of being reproduced and associated together; consciousness is said to 'receive impressions', and sensations are repeatedly described as 'impressions', as 'responses to stimulation', and so on. In short, Ward still retained, though it is true in a modified form, the old doctrine of the individual mind as a reacting essence, and of sensory presentations as the results of such reaction. That the view in question is entitled to careful consideration may be at once acknowledged; Lotze's adherence to it is alone sufficient to elicit that. All the same, we shall see reason for thinking it to be a mistaken view, and for holding that a more resolute working out of Ward's own theory of attention would compel its rejection. For, after all, the really significant feature of that theory is not a mere matter of terminology, but the distinct recognition of the fact that cognitive apprehension is, so to speak, from first to last of one piece, that its later and more developed phases differ in degree, not in kind, from its earlier and more rudimentary phases. Once allow, as Ward certainly was allowing, that cognitive apprehension is from the beginning a discriminating activity, and the doctrine of 'presentations' as themselves objects is, in truth, undermined.

The standpoint of psychology is, so Ward consistently maintained, 'individualistic'. It is, he averred, the business of psychology "to analyse and trace the development of individual experience as it is for the experiencing individual" ((5), p. 104), and not, that is to say, as it might be supposed to be displayed to an external spectator. Whilst recognising to the full the soundness of this contention, in so far as psychology claims to be the science of the actual life of mind, we may, however, legitimately question the further contention that the standpoint so described is practically identical with that of Locke, Berkeley and Hume. "Locke, Berkeley and Hume have been", Ward wrote, "justly censured because they regarded the critical investigation of knowledge as a psychological problem, and set to work to study the individual mind simply for the sake of this problem. But none the

less their standpoint was the proper one for the science of psychology itself. By 'idea' Locke tells us he means 'whatsoever is the object of the understanding when a man thinks' (i.e. is conscious)....Though he was able to give a very good account of some of those ideas themselves, he could not justify his belief in the universal world of things whence, as he supposed, certain of them 'were conveyed'....Berkeley accordingly... abolished Locke's hypothetical outer circle. Thereby he made the psychological standpoint clearer than ever—hence the truth of Hume's remark, that Berkeley's arguments 'admit of no answer'; at the same time the epistemological problem was as hopeless as before—hence the truth of Hume's remark that those arguments 'produced no conviction'. Of all the facts with which he deals, the psychologist may truly say that their *esse* is *percipi*, in so far as such facts are facts of presentation, are ideas in Locke's sense, or objects which imply a subject" (5), pp. 26–7).

But if, in point of fact, the individual mind be not "shut in within such a circle of ideas" as, according to Ward, Locke supposed,[1] if the 'objects' which the individual mind perceives be not 'ideas' but actual physical things, then surely it must be part of the business of psychology to trace the way in which apprehension of these objects comes about. For, should the latter view be taken to be the true one, the whole process of perceptive activity will call for essentially different interpretation from what it would call for were Locke's standpoint adopted. Locke, it is true, used the term 'idea' ambiguously. In the very sentence in which the definition quoted occurs, he goes on to explain that he has used the term to express what is meant by "phantasm, notion, species, or whatever it is which the mind can be employed about in thinking". Clearly, however, notions or concepts, which Locke virtually took to be meanings (8), § 1 et seq.), stand on very different footing from the 'ideas of sensation', which he took to be representative of things in the physical world. Nevertheless, 'ideas of sensation' were conceived by him to be entities totally distinct from physical things, to be existent entities, existing 'in the mind', although in some way other than that in which mental 'operations' exist there. Yet, if in the reception of these 'ideas' the mind is merely passive, as Locke repeatedly maintained, the mental operation of 'noticing' or 'perceiving', which he took to be involved in such reception, must be a process of an absolutely different kind from any process of apprehending the features of external objects. That is to say, psychology, as a science, will follow a course of procedure on the latter presupposition by no means identical with that which it would follow on the former. Moreover, just as the question whether the sun moves round the earth or the earth moves round the sun was a question for astronomy and not for metaphysics to decide, so likewise the question as to whether in perceptual experience the objects of apprehension be 'ideas' or 'things' is a question for psychology, and not for epistemology exclusively, to answer.

Not only so. "There is", we are told, "no denying a steady psychological advance as we pass from Locke to Hume and his modern representatives" (5). Yet when, for instance, in violent antithesis to what Ward finds to be the case, Hume alleged that "all our distinct perceptions are distinct existences", and that "the mind never perceives any real connexion among distinct existences", is it not manifest that he was trying to survey conscious experience not from within but from without, as though it were itself an object

[1] This statement of Ward's is not strictly accurate. In reference to our cognition of physical things, Locke held, no doubt, that we can *perceive* immediately only our own ideas, but he contended that we can *know* what we do not perceive immediately, the existence, namely, of physical objects.

to be observed; and that, consequently, he was compelled to reject whatsoever did not present itself as so much matter of objective observation? Surely, it is here the *standpoint* and not merely the *method* ((5), p. 27) that is at fault—a standpoint from which it was inevitable not only that any real connexion among so-called 'perceptions' should be missed but also that the being of an experiencing subject as more than a succession of discrete perceptions should evince itself as an unwarrantable assumption. As a matter of fact, Ward was mistaken in supposing that Berkeley and Locke shared "the Cartesian confusion of presentations with subjective modifications"(5). Berkeley, for instance, in several places expressly distinguished an 'idea' from a 'mode or attribute' of the mind ((9), p. 49 and (10), p. 455). It was Hume who took the retrograde step of looking upon these as blended together, and of endowing 'sensations' and 'ideas' with what Prof. Dewey once described as the curious property of "surveying their own entrails".

V. The aims and methods of scientific psychology

We may group the chief aims of psychological science under three heads.

In the first place, the psychologist must obviously start with that species of mental life which is directly accessible to him, namely, the mature mental life. And this, it need hardly be repeated, is a highly complex mode of existence; perhaps no material more complex is presented within the entire range of human experience. What, then, at the outset is needed in a scientific treatment is as concise and accurate a 'description' as is possible both of the mental life as a whole and of its distinguishable factors. Whatsoever stage in the development of an individual mind whereat we choose to survey it will afford a multiplicity of related factors which we are able to some extent to distinguish from one another. And such descriptive account would be incomplete if it did not rest upon and involve a classification of the several constituents of mind, a reduction of them to certain general types or forms.

A psychology which did no more than offer a descriptive account of mental facts would, however, fall short of discharging what we must regard as its scientific function. In two respects a descriptive account would fail to convey an adequate scientific insight into the nature of mind. On the one hand, inasmuch as the description must needs be based on the similarities and differences distinguishable at some particular stage, it could not yield any information respecting the relatively simple or complex character of the factors differentiated, or respecting the conditions through which those factors come to wear the aspect they present to us. And, on the other hand, the descriptive account would not necessarily involve recognition of what we may without further question take to be an undoubted truth with regard to the mental life, namely, that it is a process or cluster of processes in which both as a whole and as a combination of factors growth and development are to be discerned. In other words, the descriptive account would not be successful if kept strictly within its own peculiar limits in affording us any indication of the way in which the mental life advances from one stage to another. Accordingly, we have to take note of two further aims going beyond mere description which the psychologist is constrained to propose to himself. The one may be denoted by the term 'analysis'. Were it completely attained, it would consist in a statement (*a*) of the simpler elements or processes of the mental life, (*b*) of the laws which connect the simpler facts with the more complex, and (*c*) of the conditions explanatory of both the simpler and the complex facts of mind. But psychology is at present far from being in a position to offer any *complete*

statement of these details. The other additional aim of psychological research may be denoted by the term 'genetic'. We are desirous, namely, of having an historical treatment of mind—a history of the ways in which within the limits of the individual's consciousness his mental life develops from crude indefinite stages to stages clearer and more definite.

In noting these three aims of psychological science—a complete description of the mental life, a detailed analysis of it, and a history of its progress—we have at the same time indicated, so far as is at the outset necessary, the method or guiding idea of psychological inquiry.

It has been customary to draw a distinction between what are named the subjective and the objective methods of psychological research. By the one is meant such analysis of mind as can be conducted with the strictest limitation to what the individual observer can discover through reflective consideration of his own mental life; by the other is generally understood such researches as involve reference to the ways in which the mental life is affected by conditions that lie beyond what the individual would recognize as his own mental experience, e.g. reference to the physiological conditions which determine changes in the inner life and reference likewise to the influence which may be exerted on the individual mind by the social environment. In truth, however, these can scarcely be said to constitute different methods. What is distinctively involved in each of them is sufficiently indicated in a survey of the sources from which information respecting the mental life may be obtained. In order to gain a comprehensive view of the mind's modes of working it is never sufficient for the individual to remain simply at the position of his own personal observations, but restriction to that position is hardly entitled to be called a method.

At the same time, it has to be insisted that what has been called the objective method presupposes as the ground of its possibility the so-called subjective method. Directly, experience is possible for each individual of only one mental life, his own. No other mental life can be considered by him save indirectly by way of inference, inference which involves the interpretation of signs and analogies. He must start, therefore, with having directly presented as matter for observation, for attentive consideration, the successive phases of his own mental life. And his attitude in selecting such modes of his own mental life for observation is usually named introspective, and the whole process introspection. The trustworthiness and utility of introspection have frequently been challenged on grounds many of which are ill-founded. Meanwhile, we may assume that we do possess, to some extent, the facility of attentively contemplating the successive processes of our own individual mental lives. Such introspective observation is obviously exposed to peculiar dangers and difficulties, some of which we have already noted. In consequence, the results attained in the sphere of introspection can certainly claim no pre-eminence as regards accuracy and trustworthiness over the results of the observation of outward nature. So far from its being the case that "I possess an absolutely self-evident knowledge of the processes of my own consciousness" ((11), p. 54), it has to be admitted that such knowledge thereof as we do possess is laboriously attained and is wanting in every mark of immediacy.

All the same, in what is called the objective method of studying the mind we have no substitute for the so-called subjective method, but rather an auxiliary process depending ultimately in the most decisive manner on what is obtained by the latter. In all the auxiliary process, which has its own value, inference is involved and inference moreover

of a kind readily recognizable; it proceeds on the strength of analogy, and analogy is notoriously a somewhat treacherous ground of inference. When both terms of the relation compared are known to us and we assume that the evidence points to peculiar features of mind, on what ground does the inference rest? Clearly, only on the ground that we know in the more limited range of individual observation that certain mental facts have been constantly connected with corresponding external conditions. Not a step can be taken in applying the method in question except on the assumption that we already possess, through means of some other method, a knowledge, imperfect though it may be, of the mental life and its relation to outer conditions.

The indirect or objective method is, then, to be regarded as supplementing the individual's direct observation of his own inner life. It may be said to cover all that can be obtained by observation of mental activities other than those of the individual observer, and likewise all that can be yielded by experiment carried out on the conditions under which the mental life proceeds. As regards the former, it may again be advantageously subdivided according as (*a*) we take into consideration varieties of mental process connected with and determined by variations in the ordinary conditions of mental existence, or (*b*) according as we take specially into consideration the products of mind. Under the first of these, we may group (i) variations of a general character in the mental life itself which, although natural, yet stand in some respects in contrast to its normal condition. These are illustrated by the alternation of sleeping and waking in our existence, and as accompanying the latter the phenomena of dreams. Again (ii) we have to take account of the abnormal states of mental life, such as hallucinations, illusions, and all forms of mental alienation. And lastly (iii) we are concerned with the mental experiences of those whose abnormality results from deprivation of some one of the organs of sense and from certain nervous diseases. With respect to the other method (*b*) of indirect observation, it takes into account, as I have said, the products of mind; or, more comprehensively, its manifestations. In this very wide sphere of investigation, results of importance will be reached only by the method of comparison; and, in particular, that kind of comparison will be found fruitful which constitutes the essence of the evolutionary or historical method. In applying this method, we may proceed by comparing different forms in which a specific aspect of human culture has been presented and in endeavouring to extract therefrom some indication of the kind of change which has taken place in the mental life. Thus, for example, a comparative study of the forms of religious belief, or of the forms of political institutions, may enable us to get some light on the general character of the order of change in the mental life itself. Again, what perhaps might bring us yet more closely into relations with mental life would be the comparative study of different forms, earlier and later, of human speech. In this department there lie also investigations sometimes designated more definitely as those of comparative philology.

In reference to the genetic method, we need especially to consider the usefulness of the study of mind in the lower animals, concerning which very vague notions are prevalent. Evidently in the case of the lower animals, as indeed in the case of all individuals except himself, the observer is presented with signs from which he infers certain characteristics of the mental life with which he is familiar. The basis of the inference is analogy, and the results are evidently to be tested with all the care which is needful when we apply arguments from analogy elsewhere. In particular, it has always to be remembered that we form our conception of any mental life other than our own in strict accordance with what

we know of our own. The terms which we employ to indicate different phases of the inferred mental life have no significance for us save what they possess within our own experience. Unless, therefore, we have grounds for believing that the mental life inferred is of as complicated a form as our own, it is evident that the terms we employ must very imperfectly correspond with the actual facts. Such comparison as we are in part able to institute between the earlier and the more advanced stages in our own mental development is probably the only direct means at our disposal for remedying the defect just noticed. But, since the interpretation of all the data we obtain by observation of animals is based on our own experience, it is obvious that the utmost caution should be exercised in accepting as material for psychology records or observations on the animal mind. Feeling, perceiving, remembering, etc., must be, for example, something very different in animal life than in our own. So far as we can judge, not even the higher animals attain to the idea of self, which forms so essential a feature in the mature human consciousness.

As regards observation of stages in the development of culture, it is certainly not exposed to the dangers just referred to. The difficulty here is rather due to the enormous mass of material which philology and history extend to us, not all of which has much value as an aid to the study of mind. Yet both assist us in no small measure to correct at least psychological observations which must in the first instance be based on individual experience. Take, for instance, the case of language. To an individual of the present day language presents itself as an accomplished fact which operates upon him after the manner of other facts of his surroundings. Language is, so to speak, handed over to him in its completeness. But, from the psychological point of view, the use of language is an exceedingly complicated process, and it would be well-nigh impossible for an individual who has thus received language in its completed form to analyse what is involved in its use as a whole or in its parts. It is only through the record of much simpler forms of speech that the psychologist is enabled to obtain insight into what is really involved in his use of language. The simpler forms of speech preserve distinctions of imagination and thought that have become difficult for the more developed mind, yet which nevertheless form the foundation of and are involved in the mature product. In a somewhat similar fashion, history makes manifest to the psychological observer the enormous complexity in the conditions of what may now appear to him as simple immediate facts of the inner life. For instance, a study of the slow manner in which human sentiments or dispositions have altered side by side with alterations in the structure of human society impresses upon us in a vivid way the intricate character of what is apt now to seem to us simple and primary.

Turning now to the question as to the ways in which experiment is applicable in psychological investigation, it may be said at once that in a wide sense we may obviously make experiments on the mental life, and that we do so whenever we voluntarily modify its current or flow. But experimentation of this sort is of little or no scientific value; it is of the kind which the logician would describe as uncontrolled, whereas experiment is valuable strictly in proportion to the extent to which it can be controlled. The change which is made must be one of which we can effect measurement, or, at least, keep under our own direction. Experiment so conceived can certainly be introduced into psychological research, yet within rather a restricted range. Owing to the circumstances (*a*) that, if not all, at least a very considerable portion of our mental life is in immediate relation to bodily conditions, and (*b*) that the mental life, in its various phases, has time relations, it is

possible to apply to some extent strictly experimental methods. We may, that is to say, endeavour to determine experimentally (*a*) the manner in which processes of sense-perception vary with the bodily stimulations that occasion them, and (*b*) the general laws, if such there be, according to which the temporal sequence of ideas or thoughts takes place. With respect to the former, the method at present in vogue is mainly concerned with the measurable external events which operating on the bodily organism occasion changes in the mental life. And here one link in the chain of process is, at least, under our control. We can vary, namely, the quantity, kind and arrangement of the antecedents of some one process of sense-perception and note the resulting changes in inner experience. In this department of inquiry much work has indeed already been done, so much so that the investigations have been grouped together under a single title as though constituting a separate science, 'psycho-physics'. And it is possible that the experimental method, though with less quantitative exactness, may be extended to the study of still more complicated relations between outer changes and inner experiences, as, for example, in reference to the degree of accuracy with which our experiences represent the temporal order and arrangement of external events. Does the degree of accuracy depend on, or vary with, the rate at which the outer changes occur? How many outer changes or facts can be represented simultaneously in conscious experience? Questions such as these seem capable of solution by experimental investigation. Moreover, a third line of research would appear to be opening out to experimental inquiry, although it is true of a somewhat indeterminate kind, namely, the consideration of the way in which an admittedly composite experience has been built up out of simpler constituents. We may endeavour in such cases to produce or to modify the more composite experience in question, and thus to illustrate the way in which the complex product has come about.

VI. Psychology and philosophy

It is clear, then, that in a perfectly intelligible sense psychology may be said to be an exact science, although whether it should be described as a 'natural science' depends, as we have seen, upon the significance that is attached to the term 'nature'. But we have now to face a further question, whether, namely, psychology can be rightly asserted, as recently has been so often maintained, to be a branch of investigation altogether independent of philosophy. We have seen that while in the physical sciences the materials contemplated are all of a kind capable of being presented as objects to a cognizing mind, in psychology one of the main questions that requires to be handled *in limine* is whether mental facts can be legitimately viewed as objects, whether, that is to say, the modes through which knowing and feeling are realized in the life of the individual subject can rightly be regarded as presenting the same formal aspect, aspect as known fact, to an observer as external facts offer to him when percipient. Can the knowledge of an object be properly treated as though it were itself an object? Can the process of knowing be legitimately dealt with as though it too were one special kind of the processes which through it are known? We have already found reason for answering these questions in the negative. What precludes the modes of the mental life appearing as objects is that each such mode is related to a subject as a way in which that subject is aware or conscious. When the attempt is made to look upon a mental state as an object what usually happens is that the mental state in question is taken to be a fact *in* mind rather than a fact *of* mind; it is tacitly assumed to be an independent entity on its own account, and the mind

is regarded as though it were merely the vacant stage on which such entities play their respective parts.

From these considerations alone it follows, I think, inevitably that no truly scientific account of the history and growth of the mental life is possible except in connexion with and as part of the more general treatment which by long tradition and common consent is called 'philosophical'. It may quite well be the case that the acceptance of "any special view of the *ultimate* nature of knowledge" is not for the psychologist "indispensably necessary"; but the psychologist can no more ignore the problem of the nature of knowledge than a geologist can ignore the problem of the nature of the rocks of which he undertakes to trace the gradual formation. A matter of indifference to psychology it cannot be whether the data of knowledge are taken to be purely mental entities or some of them features of existent realities independent of the knowing mind, whether the point of view from which the individual mind is regarded be that of subjective idealism or of what is usually called 'realism'. It is not to the purpose to argue that "if the subjective idealist can continue to make his theory work, however illogically, in ordinary life or in chemistry and physiology, he can equally make it work in psychology" (7). That argument is not to the purpose because the analogy in question does not in truth hold. Ordinary life and the physical sciences proceed upon assumptions formed independently of speculative thinking; psychology does not. For the subjective idealist it is doubtless a matter of concern to be assured that his theory will 'work' in each and every field of experience, but for ordinary life and the physical sciences the workability, or otherwise, of that theory is a matter of no concern. Psychology, however, stands not in this respect on the same level as the affairs of ordinary life and the physical sciences. As regards it, the point of importance is not whether the subjective idealist can make his theory work in psychology, but whether the psychologist who works with this theory will not be altogether misinterpreting and misconstruing the facts of the mental life. Now, this is a question which can never be decided by the test of mere workability. Both the theories mentioned will, in a certain sense, work; and it may perchance be arguable that, for convenience of exposition and simplicity of statement, the advantage is on the side of subjective idealism, or, so far as that goes, even that on the ground of convenience and simplicity materialism is preferable to either. But it is futile to contend that the account given of the evolution of mind will not be vitally affected by the general theory on which that account is based. In short, it is impossible to discover any psychological point of view which is or can be independent, after the manner in which a chemical or physiological point of view is independent, of philosophical theory. The abstraction which renders the latter possible is precisely the abstraction which well-nigh every psychologist who writes a treatise on his subject begins by insisting is, from the necessity of the case, precluded in dealing with the subject-matter of his science.

There is, however, another side to the position we are defending. If the psychologist is wrong in supposing that he can leave on one side considerations which are usually regarded as belonging to the theory of knowledge, it requires no less to be maintained that the epistemologist will fall into error should he exclude from his purview considerations which are in character psychological. "That cannot be true in epistemology", Stumpf once affirmed, "which is false in psychology"; and the validity of this dictum must at any rate be acknowledged by the thinker who holds that psychology is an integral part of philosophical investigation. For such a contention means, when sufficiently explicated,

that the several branches of philosophy are interdependent, and that consequently any arbitrary severance of the epistemological from the psychological line of inquiry is bound to throw the former on the wrong track. However vitiating may be the consequences of confusing questions of nature and questions of genesis, we ought not, on that account, to cherish the hope of obtaining any satisfactory answer to the former questions without the help that can be derived from researches bearing upon the latter. It cannot be a matter of indifference to the epistemologist which factors in cognition are primary or original and which derivative and secondary; it cannot be to him a matter of indifference whether the sharp antitheses characteristic of mature experience are or are not characteristic of experience in the various stages of its development. Let it suffice to refer to the Kantian analysis of knowledge for an illustration of what is meant. The absolute distinction which Kant was inclined to institute between sense and thought, between matter and form, between a priori and a posteriori elements, ceases, it is not too much to say, to retain significance in the light of what has been ascertained regarding the evolution and history of mind.

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A PSYCHOLOGICAL THEORY OF LAW AND INTERNATIONAL LAW[1]

By RANYARD WEST

I. *Introduction* (pp. 93–94). II. *A psychological theory of natural law* (pp. 94–98): (1) *Essential human nature* (pp. 94–95): (i) *The test of psychological theory* (p. 94), (ii) *The test of behaviour* (pp. 94–95); (2) *Law* (pp. 95–96): (i) *Definitions* (p. 95), (ii) *Origins and functions* (pp. 95–96); (3) *A 'law of inevitable prejudice'* (pp. 96–97); (4) *The prime function of law* (pp. 97–98). III. *Law versus promise* (pp. 98–101): (1) *Promise* (pp. 98–100): (i) *'Pacta nuda'* (p. 98), (ii) *The psychology of promise* (pp. 98–99), (iii) *Law, community and promise* (pp. 99–100); (2) *International law* (pp. 100–101): (i) *Promise in the world community* (pp. 100–101), (ii) *Theories of international law* (p. 101). IV *Conclusion* (p. 101). *References* (p. 102).

I. Introduction

Over 350 years ago Jean Bodin(1) defined a separation between society and the state, two entities which more recent theories have inextricably confused. Human societies (said Bodin) arose by slow development under the influence of man's social instinct, a divine endowment of normal men which makes friendship a link between them beyond the boundaries of the family. In contrast, the state is an organ of power necessary to give peace and order to men. The state, he says, is usually formed and extended in violence and conquest, for the virtuous leader is "a myth of the golden age". But it is a necessary organ, a mechanism of government without which social life would be anarchic. And while Bodin endeavours to improve the rule of the monarch and his advisers by drawing their attention to the moral laws of God, nature and the nations, a Spanish jurist of the same period, Suarez(2), vests supreme power in the community, making society, 'in principle' as the lawyers say, control its state.

It seems to me that to-day when psychologists believe that they are in possession of knowledge both about the social instinct which binds man to his fellows and the aggressive individualism which signalizes his need of regulative law (knowledge which was not available to Bodin and Suarez in the seventeenth century or to Rousseau and Hegel in the eighteenth or nineteenth), we may usefully take up Bodin's separation of the machinery of government from the life of the people, and study a distinct branch of social psychology called political psychology, which concerns itself with the intellectual and emotional factors in man's political life, i.e. in the organization of law and order in his social life. We have all seen papers and books which we can recognize as studies in the science of political psychology, books such as Lasswell's *World Politics and Personal Insecurity* and Glover's *War, Sadism and Pacifism*. And to-day, despite the imperative need for study of the adaptations which are made by men, women and children to the stresses which are put upon them by the results of human political relations, it is a matter no less urgent that modern psychology should place its knowledge of human nature at the disposal of those who have as their study and practice politics, the science and art of government. To achieve results liaison is needed.

I cannot find that the legal philosophers have specifically asked psychologists for a psychological theory of law. Particular questions do, however, give openings for response.

[1] Based on a paper read at the Extended General Meeting of the British Psychological Society, April 1942.

H. J. Laski(3), in *Modern Theories of Law*, pleads for a revived theory of 'natural law', to replace those theories which conceive law to be the dictate of a 'sovereign superior'. Here it is first of all necessary to negotiate certain matters of terminology, to face the fact, for instance, that 'natural law' to a lawyer means much more than "founded in the very nature of man", though that meaning is included and can be seized and built upon by us if we are able so to do. Again, Roscoe Pound ((4), p. 279) in his *Introduction to the Philosophy of Law* asks specifically for a psychological explanation of the juridical distinction between the enforcement of legal contract and simple promise. What is the answer to this? Can a psychological consideration of such questions as these make possible the classification of the boundaries of true and effective law itself? This paper will deal with these two questions, (1) natural law and (2) law versus promise.

II. A psychological theory of natural law

(1) *Essential human nature*

(i) *The test of psychological theory.* Is it possible to found any conception of law—which is in fact an external control set upon human behaviour—upon qualities grounded in the very nature of man, in essential human nature? I would suggest that what the student of jurisprudence would like to know is how far he can rely upon that 'social instinct' of man which Bodin found to bind men together, but which Milton(5) held to be adequate to maintain order only when put into the commission of kings and magistrates, as long at least as the inherent weakness of Adam's fallen race should endure. If it be true that the hatred we repress with difficulty remains the mainspring of our corporate life, and that unity in the sphere of *this* social group inevitably means united increased aggressiveness in *that* war against another social group (if in fact the doctrine of primary and preponderant sadism be accepted by us), is there little for him to hope from the 'reaction-formations' of the social conscience in that the outward turning of the destructive instinct is "more akin to nature than our stand against it" (Freud(6))? Or if the inverse doctrine which initially similar material yields to another type of analytic mind be accepted, can those who hold that view assure him of the co-operation of the social instinct if he will only legislate or educate away the early misunderstandings, those "crises of anxiety" which turn social love to guilt and hate (Suttie(7), pp. 43 et seq.)? Or must democratic principles be abandoned and must we be "forced into co-operation from the earliest possible moment" (Adler, quoted in (7), p. 5)? Hobbes and Locke and Rousseau had theories comparable to these and they elaborated their political import further, for the most part, than we have done. But here we have no means of quantifying our sociological material. Proceed by a libido theory or a conditioned reflex hypothesis about fundamental emotional contents (or discharges)—you cannot even yet establish objectively any proportioning of responses of aggressiveness or co-operation which will demonstrate that any particular type of neurosis (let alone a 'normal' mind) contains an absolute preponderance of the one or the other; or is so conditioned as to enable us to rely upon either individual aggressiveness or social co-operation as forming in any sense a basic or fundamental quality of the mind.

(ii) *The test of behaviour.* If we now turn away from this failure of the quantitative method to consider not analytical yields but social behaviour, shall we find ourselves nearer at once to a united and a scientific front? Can it be asserted that, whatever the

reasons for their conduct, most men at most times *behave* as if they were under the influence of a predominant social instinct?

In the first place, it is known that neurotic patients behave well while feeling ill, and that with great difficulty and disharmony to the personality they vent as aggressiveness that repressed aggressiveness which some of us paradoxically call the stronger element of their minds. They vent it in prepared and sheltered places and are seldom turned into courageously aggressive people. Does not society in fact master the individual here?

We know of course that in the Italian Alps there exists a Pico Benito. But the conscience-free bully, the happily aggressive child, is in a very striking minority among us—appearing as the self-selected leader under whose government and state ordinary mortals serve and obey, or unite to punish as the case may be. Even such leaders can often be seen to be devoting themselves to ideals beyond their own safety and even interest, to be obeying a 'higher' law (following the dictate of a large and nebulous father, or prancing before a distant but none the less a law-giving mother).

But apart from those who must be hostile and those who feel able to bully, are not a huge majority of men in society included within the observation that for the society which has their allegiance "most of them at most times wish to obey the law" (Lindsay(8), p. 62)? If that be true, then is there not in the corollary the essential though not of course the only reason why a necessity of government should be externally operated law? Thus it may be postulated that law is necessary because each man is liable at some point to wish to break it; its ideal foundation is that most men at most times desire to keep it.

(2) *Law*

Let us now consider law as seen by the lawyer.

(i) *Definitions.* Law may be cautiously defined as 'rules for the guidance of conduct'. But to exclude purely moral laws on the one hand and scientifically immutable laws on the other, it is customary to add when speaking of the 'law of the land', "the breach of which is in principle liable to be visited with sanctions" (Austin, see (9), p. 195). Bearing in mind the function which may be expected to accompany the law of well-governed communities, its definition as "the effective regulation of conduct" may perhaps be preferred.

(ii) *Origins and functions.* The origins of law are of course very varied and they appear different to the different minds which approach their study. For instance, Maine described law as a historical upbuilding from the regulations of primitive societies(10), while to Jenks, laws are "the largely unconscious efforts of communities to realize their material and spiritual needs"(11). In practice, laws may originate as rules tyrannously imposed upon a community by an autocrat or an oligarchy, the laws which govern a community may or may not be directed to serve the interests of that community, and the community as a whole may or may not desire them. In defining the function of law, theory has again been influenced by personal and ideological philosophy to a striking degree. Here are a few definitions. Law exists (1) to maintain the state (Jellinek, see (12)), (2) to organize the state (Ehrlich, see (12)), (3) to enrich the community (Jenks(11)). (4) It is the minimum interference necessary to protect the interest of the individual (Locke(13), Bentham(14)). (5) It consists solely of duties (Comte, Duguit, see (3)). (6) It regulates both duties and rights (Pollock(15), p. 73; Allen(16), p. 220). Each of these theories of

the function of law might be taken, and from knowledge of the unconscious mind reasons could be suggested as to why this abstract question of the external control of the aggressiveness of man has appeared in such different ways to different types of mind. To do so would be a valuable study, if sometimes a precarious one. But the purpose of this paper is to assert that the essential process in law-making, without which there is no order among men, derives from the natural fact that the human psyche cannot in the last resort control its own aggressive anti-social phases except with the help of others. The essential human need of law is not to achieve any of the partisan interests which I have just listed. Its essence is not even to protect the 'good' man against the 'bad', but to protect the interests and the life of social man against the prejudicial and disruptive influence of aggressive man, to protect men against themselves—the function allotted to it by Milton. The essential root of law in human nature is that it is necessary not for the control of *A* by *B* but rather for the control of *A* by himself through *B*, an extended self-control.

Here we have at once a psychological justification for law and a guide to 'good' law.[1] Our further enquiry is to discover what man's nature requires of law, and to find a psychological touchstone which differentiates good and bad law.

(3) *A 'law of inevitable prejudice'*

That aggressiveness of normal man which is at variance with his social conscience is vented under certain definite conditions and is repudiated by the personality in certain definite ways. The conditions of ascendancy of aggressiveness in normal man are, first, that it is provoked, temporary and limited. It is provoked by situations which arouse anger, or prejudice, or suggest danger. It is temporary and limited, because its manifestations are unacceptable to the social self (which is shown by the behaviour test to be, in most men, at most times, the ruling self). For the same reason anti-social aggressiveness is, in general, repudiated, explained away, or forgotten when the social self is again in control and men are again dominated (in Freudian terminology) by their ego-ideal. We know something of the mechanisms of rationalization and falsification which are at work here. Faced with evidence of his departure from his own standards of rectitude, a man may challenge the facts or he may falsify the motive. Equally important is selective amnesia. Known to be of key importance in our individual lives, this mechanism has been noted by political observers before us. "All non-conformists [wrote Graham Wallas in 1908] are influenced by their memory of certain facts of which very few churchmen are aware, and all Irishmen by facts which most Englishmen try to forget." Nor must we omit 'projection', that method of repudiating our own aggressiveness by imagining it to be in others.

It is by these means that prejudice is universally established. And I do not think that medical psychologists, accustomed to treating sufferers who by reason of their suffering are in a different class from themselves, quite fully realize the universality of these mechanisms of distortion of fact. Hardest of all is it to apply knowledge about prejudice to any belief or system of thought necessary to our own self-esteem. The sort of impression which the greatest discovery of our science—that of unconscious motivation and certain of its mechanisms—has made upon other faculties is illustrated in a recent

[1] 'Good' law is defined, without further reference to formal ethics, on p. 98.

book by an international lawyer. The writer clearly feels the need of psychological understanding in his subject. He writes: "A good many deductions which appear to us superficially to be derived from facts or at least from established results of research may, if we care to probe deeper, be unmasked as subconscious and disguised judgments, based on cherished political, ethical or metaphysical a priori principles. In an epoch such as ours, no one can help having subjective opinions on fundamental questions such as state and individual democracy and totalitarianism, nationalism and internationalism, or power politics and international order. It is, however, our duty to ourselves and to others to make such subconscious valuations conscious and to characterize them frankly as political valuations" (Schwarzenberger(17), p. 18).

Now we know that that cannot be done. The ordinary man cannot have his subconscious valuations made conscious, even if there were instituted the fifty-year campaign of widespread psychoanalysis which was once advocated by Dr Glover, though well-conducted research might usefully establish a number of typical prejudices of certain types of normal mind in a much less time than that. It is not after all only fixed and readily psychoanalysed typical prejudices which distort our judgment. The law and government of men must be built upon a recognition of constant distortion in evaluating *all* personal or group relationships where unconscious emotional forces are involved. It is not the fact of unconscious motivation so much as its universality which needs to be stressed to-day. What is now needed is the enunciation by psychologists of a 'law of inevitable prejudice', which states that "the human mind is endowed with a machinery for maintaining self-respect but none for making accurate moral judgments in the face of emotion. Self-respect is maintained by factual distortions attained by the psychological processes of fantasy identification, rationalization, repudiation and projection. The process serves the double purpose of the exoneration of self and the incrimination of others, and cumulatively leads to justifications of objective deterioration of personal conduct in respect of others." The result of this is to emphasize the maxim of Hobbes (widely held but not universally accepted over the whole range of legal theory) that "no man can be admitted a judge in his own cause".

The judicial function of the human mind, the aim of which is the maintenance of equity, thus operates only in regard to others. The psychological 'law of inevitable prejudice' has required mankind to organize or to submit to the application of juridical law from sources external to his individual quarrels. This process of attainment of law has been a pragmatical one—the explanations of it which have been given have been conditioned by man's inability to see himself as requiring restraining law. But the convention that the law protects the good man against the evil man (e.g. Locke) has permitted general acquiescence by men in the systems of law which have been set up.

(4) *The prime function of law*

The prime operative duty of law is the control of human aggressiveness. In pursuance of this duty, law should proceed against the aggressiveness in man rather than against the aggressive man. This it can the more readily do if restraining law be regarded as a means of securing the continued effective ascendancy of the social instincts of men over their individualist aggressive instincts—the ascendancy, so to say, of normal 'super-ego' standards and demands. Law thus maintains one set of moral values, those of our

predominant social selves, against another set, those to which we are drawn in times of the ascendancy of our self-assertive anti-social instincts.

The definition of the ideal function of law as an extended self-discipline of man indicates the psychological source of the moral obligation to obey good law. For it enshrines a man's 'conscience', which is his conscious and unconscious estimate of his social dependence and of what that requires of him. The law stabilizes conduct despite the ebb and flow from these standards which are favoured by each man's inevitable adherence to the demands of the 'pleasure-principle'. Thus good law should externally guide and internally oblige us towards a just proportioning of our instinctual satisfactions to enhance at once the welfare of our fellows and ourselves. But, grounded, as it was by the sure instinct of Milton, in the curse of Adam's race, i.e. in human nature, the inevitable prejudice of man will insure that internal obligation alone will never suffice to give him social order, unless it be put into the external commission of execution of his fellows. Here then is a 'natural' law which teaches man, not only his need of his fellows, but his constitutional inability to regulate his relationship with them unaided.

III. Law versus promise

(1) *Promise*

(i) '*Pacta nuda.*' The second question of the lawyers which seems fruitful for discussion by psychologists is that of law versus promise. Why is it, asks Dean Pound, in effect, that both judicial decision and legal theory distinguishes a simple promise (*pactum nudum*) from a formal contract?

The special attitude to *nuda pacta* (or 'mere promises') on the part of the law is an interesting one. It is by no means universal; indeed, we have it on the authority of Pound that on the whole European Continental Law followed Grotius in compelling people to honour all promises duly made ((4), pp. 242 et seq.). But English law has tended to examine the promise further with such questions as: "Was it reasonable or unreasonable?" "Did he really intend to perform it, or was it merely 'ostentatious'?" For "talk is cheap", said the English law. Again, according to Maine(10) the ancient law of primitive communities looked primarily to the correctitude of the ceremonial with which a promise was entered into before enforcing it. Its deliberate nature was thus vouched for; and such ceremonial also assured a reasonable assumption of expectation of fulfilment by the promisee. The point for us to note is that despite efforts to enshrine all promises as legal contracts, practical considerations often compel the law to recognize that to do so is unreasonable.

(ii) *The psychology of promise.* The psychology of promise will bear investigation. Promises form a touchstone for our illusions about ourselves. Do *we* keep our promises? Consciously, yes! "A promise is a promise." But so often other people do not quite keep theirs: "Promises are made to be broken!" Yet, subconsciously, how happy are we about our own promises? How often are we aware that something may cut across their keeping, rendering it impossible? "Spared and well...", "unless something unexpected happens..."—how much we prefer vague promises to definite ones. A promise becomes effective as an unaided means of self-control when two conditions are fulfilled: (1) the intention of service when the promise is made, and (2) the successful reinstatement of that intention when the promise is required to be fulfilled. Now if that reinstatement

will be an easy matter, why promise? ("No, not an oath! What need we any spur but our own cause to prick us to redress?") The phrase, "I'll be there", is either a forecast of fact or it indicates resolution: "I wish now to be there then." If a promise is made, the resolution then becomes implemented in support of the following argument: "I may not wish this enough when the time comes. I will therefore call in the aid of my self-respect and the respect others have for my constancy and reliability by so affirming my present intention that I shall find that intention implemented when the time for execution comes with its other stimuli and its other feelings." In the background of a promise it is thus important to have (1) some degree of social community between promisor and promisee, and (2) a super-ego organized by training in loyalty to that community and in self-respect so that it is able to overcome the varying resistances in the self-assertive ego on the particular matter in question. It is noteworthy that even where a super-ego is effective through training in one community, that super-ego may be inadequate where imperative 'sanctions', internal or external, are withdrawn. A man who is honest in Birmingham may steal, if he can, in Leeds.

When it insists upon treating 'mere promises' leniently, the law tacitly recognizes that there are often difficulties in reinstating the promising frame of mind. It further recognizes the undue readiness (the levity) with which the mind will make large promises ahead just because it is unable to visualize what the balance of feeling will be when the time of breach or honouring arrives. The law has been pragmatic in this distrust of informal promise as opposed to the panoply of legal contract, "signed, sealed and delivered", the ceremonial of which emphasizes the solemnity and binding nature of the agreement to an ego which has unconscious hopes of a loophole of escape. But we can see good reasons for its distrust in the temporary undue ascendancy, this time of 'super-ego' standards, which it would be 'unreasonable' to enforce. For where the internal sanctions exacted by conscience are inappropriate or fail the law has to attempt an external arbitrament of a reasonable balance between men's social and self-assertive impulses. And here we see that not only the desires of the ego but the promises of the super-ego may need external limitation and reduction in the interests of justice and equity.

(iii) *Law, community and promise.* The function of external guidance in the interest of the social life of the guided has to be performed by the law throughout the whole development of man's control of his wayward, forswearing and complacent nature by himself. The natural stages of this development within any community appear to me to be as follows: (1) Control originating from outside the individual, combining with external cultivation of his social instinct, as in the education of infancy and in 'tyrannous', autocratic and primitive forms of political control. (2) Control originating from within (i.e. self-control) but operating through agreed laws executed by society from outside. (3) The approach to man's ideal of direct self-control, the phase in which law may be reduced towards becoming a mere regulator of custom. It is only in this last phase that man's promises begin to represent a state of objective reliability because they then represent the major self of a self-controlling individual. That is the stage of the ideal man in the ideal community.

But though it is the last mechanism of contract upon which to rely in a community which is not closely knit together by common feeling, common loyalties and common laws, promise-making is the readiest form of contract to be undertaken. No community appears ever to have achieved the government of itself exclusively by promise and direct

self-control. Yet each individual tends to believe his own word to be reliable. As with aggressiveness, the fault appears to be only in others. And where there is weak community and weak law, promise-making undergoes the twofold expansion produced by the irresponsibility resulting from a weak super-ego and the conscious and unconscious awareness of the absence of an external sanction. The enforcement of promise by legal means fills the whole wide gap in social development between the ready promise-maker of a primitive community of complacent but irresponsible members and the reliable promise-keeper of the ideal community.

(2) *International law*

It is instructive to consider the matter of the legally enforceable promise in the field of international law. Individual men are usually dimly aware that their promises may lead to awkward predicaments without being aware that they will wish to break them. In consequence, word is given with intuitive caution over detail, but much more readily over general matters. A man who unconsciously wishes to elude an obligation will try to avoid submitting it to the jurisdiction of any law which is fact-finding and externally enforceable. Unless he be a rogue, a man gives his word because he believes that he will keep it. But if promisor and promisee do not trust each other sufficiently to place the execution of their promise in the hands of a third party their community is a weak one and there is at least the possibility that they do not trust themselves not to want to make use of a 'unilateral interpretation' of their treaty. And that, when seen from outside, means to break it. Thus the members of weakly knit communities are most in need of external law. But at the same time they are the most tenacious of their sovereign rights in avoiding it, and most ready, in fairly complete good faith, to substitute promise for binding contract in their dealings with each other.

(i) *Promise in the world community.* The international life of this century has shown pre-eminently these evidences of weakness of community. It was possible to promise general disarmament where it was impossible to implement any one of many available plans for a reduction of war effectives. It was possible to renounce war as a means of national policy where it was impossible to make appropriate treaties with any of our likely enemies. And with the possible exception of the disarmament proposal of France in 1932, no European government has shown any readiness to leave the ultimate interpretation of its promises in the hands of a third party.

Here we come to the crux of this matter. In spite of the fact that promise-making is facile and promise-keeping requires external enforcement unless the community be both a mature and an ideal one, yet international law (unlike all other law) employs promise without external enforcement as its first and only method of guaranteeing contract among the members of our budding world community. An attempt has thus been made to found international law upon the shifting sands of self-honoured obligation upon which no law has ever stood in the history of man. F. E. Smith (later Lord Birkenhead) ([18], p. 141) says upon this point: "Treaties form the contract law of states and it is in dealing with their enforcement and duration that international law most conspicuously fails. In the absence of a supreme authority capable of developing a system of law and enforcing its decrees, all rules are of the nature of suggestions for the guidance of conduct. And while nations are so careful...to reserve their right of action on questions concerning their 'honour and vital interest'...these rules must remain...pious aspirations."

That was said in 1918. Then came the Covenant of the League of Nations. But still the fault remained unremedied. "The Council shall meet...", "the Council may direct...". The execution and the power remained in the hands of the promisors, who for the most part meant to honour their obligations. But equally for individuals and for groups, because of the altered viewpoint which comes with an altered emotion, the cry of "circumstances alter cases" will ultimately arise from one party to every contract, unless he be educated to place upon his 'super-ego' that strain which, in the absence of a supporting loyalty to a close community, the super-ego is unable to sustain. The alternative possibility, that the initial emotion at the time of the promise will never change, postulates a community very much at variance with the present state of the world.

The problem of international law is always seen by the politician as how to bind the other man (because he needs it) and remain free ourselves (because we shall be honourable). The great nation, or group of nations, which can bind itself will free the world.

(ii) *Theories of international law.* And thus we have our pathetic array of theories of international law, commencing with the frankest and most flagrant:

(1) That that august rule of guidance is the sum of the rules by which a state consents to be bound, but "only so long as it consents to be bound" (Jellinek, quoted by Lauterpacht(19), p. 410). This is not law but anarchy. It depends upon that conception of a sovereign source of all law as residing in the 'state' instead of in the community—a conception which enshrines a fiction not without harm when law internal to the state is under consideration, but which contradicts the very essence of law when sovereign overlordship over national subjects becomes transformed into sovereign independence of the fellow-members of the world community.

(2) There have been attempts to reconcile such conceptions of sovereignty with law. They are analogous to man's individual attempts to secure order and go armed. They are also analogous to the strutting two-year old, attempting to have his cake and eat it. For sovereignty "absolute, unlimited, indivisible, uncontrollable, inalienable" (Jenks(11)) is our familiar "omnipotence fantasy". It is a pity if by any defective analysis we should prolong the time during which we allow our governments to "fuse our ego-ideals" and "identify us in our egos" in this narcissistic and disastrous manner.

(3) Finally, there are those (Brierly(20), Zimmern(21)) who hold that community precedes law and that international law will grow strong itself as international community solidifies. Their order of development is (1) society, (2) awareness of community, (3) advance of law. That order has never happened in the past. Community has grown out of externally administered law; never the reverse.

IV. Conclusion

We may conclude that the good law of a good state represents the social instincts of the majority of its members put into external commission of execution as an extended self-control. But international law has so far been founded upon promise the execution of which is left at the mercy of the inevitable prejudice and aggressive instincts of the promisor. By leaving its subjects free to judge their own causes international law does not and cannot fulfil the psychological requirements of true law, that the force of its administration be external to the parties concerned. Nor can the sovereign state ever execute international justice.

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THE PSYCHOLOGIST AS AN EXPERT WITNESS IN A COURT OF LAW

By JOHN M. GIBBS

I. *The expert witness* (p. 103). II. *Established procedure in Juvenile Courts with reference to psychological reports* (p. 103). III. *The value of the intelligence quotient to legal proceedings* (pp. 103–104). IV. *Reports of two cases heard at the Old Bailey, January* 1942 (pp. 104–111). V. *The establishment of the credentials of the psychologist* (p. 111). VI. *The scope of the psychologist's evidence* (p. 111). VII. *Discussion* (p. 111). VIII. *Summary* (p. 112). *References* (p. 112).

I. The expert witness

As a general rule in a Court of Law parol evidence is not admissible as to anything not immediately within the knowledge of the witness—the expression of opinion or belief is excluded. To this rule, however, there is the necessary exception on questions of the identity of things or persons or the genuineness of handwriting, where the witness is qualified to express a credible opinion or belief on the subject, and in matters of science or trade an expert or person intimately acquainted with it may be called upon to give his opinion as to the probable result or consequence from certain facts already proved. For instance, if it were required to determine whether a man died of any particular disease, symptoms being proved, a physician may be called upon to give in evidence his opinion as to the disease of which the party died as founded upon the symptoms so proved, although he may have never seen the deceased. Upon a question of insanity, a medical witness may give his opinion, from conversation with the accused and from the facts of the case, on the insanity or otherwise of the accused. The evidence of a psychologist as to the intelligence of a person accused of a crime has recently been admitted in a court of law, so it may be considered that the psychologist, as distinct from and in addition to a psychiatrist, can now be regarded as an expert witness.

II. Established procedure in Juvenile Courts with reference to psychological reports

For some years magistrates have accepted reports from psychologists or psychiatrists on children appearing before them, such reports being usually made at the request of the magistrates. These reports are not concerned with the facts of the charge, the guilt or innocence of the child, but they attempt a picture of the social history and psychological state of the child and they are intended to assist the magistrates in their disposal of the case. The reports are based on an enquiry in which the intelligence quotient plays an important part; and the actual quotient, or more commonly the group into which it falls, is stated in them, but it must be stressed that neither this report, nor the I.Q. in particular, is taken into consideration by the magistrates in their assessment of the facts of the case.

III. The value of the intelligence quotient to legal proceedings

It is not difficult to suggest cases in which an estimate of the intelligence of the person charged, whether child or adult, would assist the judge and jury or the magistrate in their assessment of the facts of the case and the degree of guilt of the person charged. The general rule of law is that a person cannot be convicted in a proceeding of a criminal nature unless

it can be shown that he has a guilty mind, "*mens rea*". In some instances this *mens rea* is easily established but in others it must be dependent, in part at least, on the intelligence or comprehension of the accused. The law accepts this, for it holds that no child under the age of eight years can be guilty of any offence, and this in spite of most overwhelming evidence to the contrary both as to the child's acts and intentions. Where children between eight and fourteen are concerned this presumption continues, but may be rebutted by strong and poignant evidence of a mischievous disposition. In certain offences, for example, "receiving stolen goods knowing them to have been stolen", the degree of intelligence of the accused may well decide whether he should have known from the proved facts that the goods were stolen or whether he could be imposed upon and so receive them in all innocence. In cases in which two or more persons are jointly charged, their respective I.Q.'s would be of assistance in determining the various roles of such persons and in assessing the differing degrees of complicity.

IV. Reports of two cases heard at the Old Bailey, January 1942

These cases are now reported in some detail as they are the first known to the writer in which the evidence of a psychologist as to the intelligence of the accused has been admitted in a court of law. We are concerned with one of the defendants, known hereafter as C or Micale C, and the relevant facts as summarized by the defending solicitor are given herewith:

Mr C is of Italian extraction and pronounced Italian type. He was born in this country, was taken to Italy at the age of about 2 and remained there for a number of years before returning to England. He is married, has two young children and his wife is expecting another baby in about four months.

From information which we have gathered it appears that C, his younger brother A, and his brother-in-law, E, were running a small Italian café in Islington, the business standing in the name of C. It is understood that C can read a little Italian, but cannot read or write English and can only sign his name. His younger brother states that he (C) is, and always has been, very simple-minded and subnormal in intelligence. The business stood in the name of C because, on the death of the parents, he was, by reason of being the eldest son, the head of the family and in accordance with Italian family relationships he was entitled to his position as such. A states, however, that C had to be guided in everything he did as he was quite incapable, by reason of his simple-mindedness, of dealing with normal business matters. As a result of the war both A and E were called up into the Army and it was deemed wise to let the Restaurant to a third party, and C obtained employment in connexion with the canteen of a factory. During this time (the material period is one of five weeks) he was approached, firstly, by somebody who stated they had corned beef for sale and subsequently by a gentleman who had some second-hand clothing for sale.

With reference to the corned beef: he met a man in a public house who asked him if he could do with some sixty tins of corned beef at 18*s*. a tin. He at first attempted to arrange for someone else to buy them and later for someone to take a half share, but on these arrangements falling through, he bought them himself at 12*s*. a tin, which figure had apparently been suggested by one of the possible purchasers earlier in the transactions. His brother returned on leave and was able to sell a small quantity of the beef at 16*s*. a tin, but the greater proportion was eventually stolen, with the result that the transaction was a considerable financial loss to the C family.

The relevant happenings occurred just prior to the introduction of the Points rationing scheme. C is charged with receiving these goods knowing them to have been stolen.

So far as the clothing is concerned, he met another man of Italian extraction, a seaman named G, and they appeared to have had a discussion as to who could speak Italian. C stated that he could and G admitted that he could not. G then asked C whether he could do with a couple of suits and C stated that he could. G called at C's house at about 10.30 one evening and produced a case containing a considerable quantity of men's and women's clothing. C appears to have asked if the clothing was 'all right' (i.e. was it honestly obtained) and G informed C that he had friends who worked on the railway and that it was quite 'all right'. This appears to have satisfied C, who states that he had seen shops in various parts of London selling Railway Lost Property, and he assumed that people who worked on the railway

had better facilities for purchasing such goods than people who did not work there. It would, of course, make any normal person most suspicious that the goods had come from people who worked on the railway, but C appears to have been so satisfied with the honesty of the source that these facts are set out in the statement which he subsequently made to the police. C is charged with receiving these goods knowing them to have been stolen.

C is anticipating being called up into the Army in the near future, and realizing that his wife was facing a pregnancy he wanted to leave her with as much money as possible. It would seem that it was for this reason that he embarked on these transactions, but that owing to his low standard of intelligence and his simple-mindedness he did not appreciate that he had come in contact with rogues. He is absolutely emphatic that if he had had the slightest suspicion that any of the goods were not honestly come by he would have had nothing whatever to do with any of these people.

Certain points emerged from the depositions and statements and from the evidence and on these the prosecution relied to show that C in fact knew what he was doing and was not imposed upon.

Firstly, he had been employed as a canteen manager by a well-known caterer at £7 a week (what this involved was never clear, the defence maintaining that it never consisted in more than pushing around a trolley and distributing food) and that he had 'run' a café. Secondly, he had the control of £500 belonging to the family as a whole. Thirdly, he had a considerable profit from the re-sale of the cloth and of the corned beef. Fourthly, in his statement *re* the cloth he is alleged to have said: "When he brought the suiting I knew the stuff was not straight."

Psychological and psychiatric reports.[1] At the police court, on the instructions of the solicitor for C, it was put to the police that C was of a low standard of intelligence. This the police refused to concede, stating that he was "a knowledgeable man", and "an efficient business man, rather sharp and active". In view of this C was referred by the solicitors to the Institute for the Scientific Treatment of Delinquency for a report on his intelligence. Psychological and psychiatric examinations were made and a full social history taken. The psychological report is given in detail:

Test Results: New Terman Revision: C.A., adult; M.A., 7 years 1; I.Q., 47.

Progressive Matrices: Score 11. Rating: "Intellectually Defective."

On the intelligence tests C falls into the 'imbecile group'. It is surprising that he has not been certified under the Mental Deficiency Acts or the Education Act, but probably his Italian nationality and residence in that country protected him.

I am convinced that the above estimate of his intelligence is a reliable one; he co-operated excellently and I am sure that he did not realize the possible import of the tests and in consequence did less well than he was able; an I.Q. of 47 represents his real ability.

He has therefore a mental age equivalent to a child of seven years and the comprehension of a child of that age.

His behaviour in the tests was childish, he laughed uproariously at the absurdities he was able to detect, his comments were naive: "That is hard—that is easy"; he was not at all conscious of the childish form of the tests he was required to perform and his conduct bore out the estimate of his intelligence.

His defence will, I think, have to be one of insanity as mental deficiency is not *per se* a defence, using his inability to understand the 'wrongness' of his particular acts, and it is, I believe, within the powers of the Court to order that he should be certified as a defective.

The psychiatric report agreed that the case was one of mental defect and that C had also a neurotrophic skin disorder and that the history suggested certain signs, hallucinations, etc., of a psychotic trend.

[1] These reports are reproduced by permission of the Institute for the Scientific Treatment of Delinquency, London.

The psychiatrist also made the very pertinent comment:

On the question of legal responsibility for his actions it will have to be borne in mind by his defending solicitor (1) that he had access to a sum of money not much less than £500 accumulated 'at home'; (2) that he presumably negotiated this transaction unassisted; a court of law may regard these facts as important evidence of mental capacity although of course they are open equally well medically to an opposite interpretation.

The defending solicitor did not propose to submit that C was insane and therefore not responsible for his actions, and as the defence of mental deficiency stood or failed by that contention, it could not itself be raised. The defence therefore rested on the short point: C is a simple-minded man of low intelligence, and he may well have failed to comprehend that there was anything suspicious in the circumstances which would be highly suspicious to a fully matured intellect.

The psychologist's evidence. The second case, that of the clothing, was heard first and after a short statement of the defence and C's own brief appearance in the witness box the evidence of the psychologist was taken. It is reproduced in full:

THE PSYCHOLOGIST (*examined by the Counsel for Defence*):

Q. What is your full name?

A. X. Y. Z.

Q. I think you are a Master of Arts. What are your other qualifications?

A. I am a Master of Arts of Cambridge University and Master of Arts, London University; I am Honorary Psychologist to the West End Hospital for Nervous Diseases, Honorary Psychologist to the Institute for the Scientific Treatment of Delinquency, Clinical Assistant in the Department of Psychological Medicine at Guy's Hospital and Psychologist to the Herts County Council, Psychiatric and Child Guidance Service.

THE RECORDER:

Q. There is no degree in psychology at the University, is there?

A. Yes, there is a full degree in academic psychology at London University and other Universities and I have taken a clinical psychology course at Guy's Hospital.

Q. But there is not an actual degree for psychology, is there?

A. No, my Lord.

Q. You may get it later on, it may come in the course of time?

A. Yes.

COUNSEL FOR DEFENCE:

Q. Have you had anything to do with the defendant?

A. Yes.

Q. When was that?

A. That was on the 7th January, 1942.

Q. Had you been supplied in advance with a copy of the statement that he is alleged to have made?

A. Yes.

Q. So you knew what the allegation was that was made against him?

A. I do not think at the time I had all the copies. I cannot exactly remember what I had at that time—something was supplied later, but I am not quite sure what.

Q. At any rate you now know what is alleged against him?

A. Yes, I do.

Q. I do not want to interrupt you, because you will do it so much better without me. Tell his Lordship and the jury what you think of this man, as to his intelligence.

A. My Lord, I saw the defendant entirely with a view to assess his intelligence, not on any question of assessing whether he was sane or not, and for that purpose I gave him a full intelligence test; a verbal intelligence test, and, in order to avoid any difficulty over language, a performance intelligence test, and with those two tests I was able to arrive at an assessment of his mental age. My assessment of his mental age is that he has a mental age of a person of seven years. There is another concept which is in line with this, and that is the concept of intelligence quotient which is the ratio of a person's intelligence, his

mental age divided by his chronological age. The person of average intelligence has an I.Q. of 100; a brilliant person has an I.Q. of 150; C has an I.Q. of approximately 47. Usually for certification purposes under the Mental Deficiency Act an I.Q. of below 50 would place him inside the Imbecile rating. I am surprised that he has not been certified under the Education Acts or the Mental Deficiency Act, probably his stay in Italy and then his return to England avoided that. I am, I think, convinced that he is as a child of seven years as far as his intellectual capacity is concerned, as far as his comprehension is concerned.

Q. There is one thing which I will ask you. Would a child of seven be unlikely normally to manage to trade in the way in which it is suggested that this man has traded in this case? Most young children of seven do not do that, do they?

The Recorder: Run the cafés.

Counsel for Defence: My Lord, that is not the evidence, is it?

The Recorder: I do not know whether it is quite the evidence, but it seems to be included in it, does not it?

Counsel for Defence: I should have thought not, my Lord.

The Recorder: Very well, we will not argue....The jury have listened to the evidence. He said: "I ran three cafés with my brother and my brother-in-law."

Counsel for Defence: Yes, but you have what he did in the café and his brother did all the buying.

The Recorder: He said "ran"; the evidence was he ran.

Counsel for Defence: Took a part in running a café.

The Recorder: Yes, he worked as a manager for a large dairy company for a period of time.

The Witness: Could I have the question again, my Lord?

COUNSEL FOR DEFENCE:

Q. Yes. You have heard the evidence in this case in so far as what he sold these goods for and bought them for, have you not?

A. Yes.

Q. In view of what you found on your examination, does that surprise you or is that consistent with that?

A. I can say at once that it does surprise me that he appears to have done so much in business affairs. I do find that surprising.

THE RECORDER:

Q. Do I understand from you that he has about 47% intelligence?

A. Yes, an I.Q. of 47.

Q. I think you say he has 47 degrees of intelligence and mental deficiency is reckoned at anything below 50?

A. Mental deficiency is reckoned at anything below 70. Imbecility is reckoned at anything below 50. Between 50 and 70 is the feeble-minded rating.

COUNSEL FOR DEFENCE:

Q. Did you put him through certain tests?

A. I did.

Q. How did he behave when he was invited to do them?

A. His behaviour was, as I said, I think, childish. He was very amused at some of the tests which had some absurdity in them, something foolish, a picture or a story, and his comments were very naive. He would say "This is easy", or "This is hard", and he was not at all embarrassed by the childish form in which the questions were put. Things like "In what way are an apple and an orange alike?" he spent a long time thinking about it and then was quite pleased when he got the answer. As regards quite simple questions such as "What is the thing for you to do if you found a little child in a street that was lost?" he was not at all conscious of the childish form in which they were set and he entered very much into the spirit of it just as a little child of seven would do.

Q. That summarizes really your view of what his mental age is, does it?

A. Yes.

COUNSEL FOR CROWN:

Q. Did you gather from what he said to you that he understood why you were asking him these questions?

A. No, I do not think he understood what the import of the tests was.

Q. Did he understand why he was there at all or why you were there, asking him these things?
A. I very much doubt it.
Q. Would he know when he bought these articles that they were rolls of cloth and overcoats and suits?
A. Yes.

THE RECORDER:

Q. I gather he consulted you through his solicitor?
A. Yes, I think so.

COUNSEL FOR CROWN:

Q. He would know it was cloth and so on he was buying?
A. I think so, yes, I feel sure of that.
Q. Would he know that it was wrong to buy it if it was stolen?
A. I am afraid I cannot answer that question.

(The witness withdrew)

THE RECORDER'S SUMMING UP (with reference to the psychologist's evidence):

Now finally C: C is charged with receiving the suit lengths sold by him to S. What I have told you in the case of G also applies here as to the three cases. You have to be satisfied that the property was stolen, that he was in possession of it, and that he had a guilty mind at the time when he came to be in possession of it. According to his own confession, he met a dark man. You have heard his statement read this morning, and I was particularly careful that your memory should be refreshed about it. It comes to this, that in the end he says: "This man told me he worked on the railway and that the dresses and suits were throwouts. He said he had to sell them. He knew the boys on the railway."

Perhaps comment is superfluous, members of the jury. I refrain from saying anything about it. You are the judges of fact. He went on to say: "I asked him how much he wanted, and he said £22. I gave him £20." This is the simpleton, you know; this is the gentleman who is only seven years old. "I gave him £20, and he took it, because I would not give him any more." This is his own statement—a man who has only the mind of an infant. "I stuck out for £2." Why?

Then he introduced him to somebody else; never mind who it was; C says it was J, but do not bother about that; only use C's evidence as evidence against himself. "It was a tall man who came with the suit lengths. I gave him £45 for them and sold them myself in a trice for £65"—£20 clear profit, just for carrying it from his place at Liverpool Road to Harringay; that is all; £20 for that.

Somebody said in this case: "Nowadays all we want is the stuff." That is the importance of this case. If anybody can lay their hands on the stuff, the profit is automatic. The war has done that. That is why I think these cases are so difficult very often to bring home; but it is of great importance, not merely of importance to the people in the dock—of course, it is naturally of importance to them—but important to the community at large.

Then he said: "I knew the stuff was not straight." That is what he said. He cannot blame anybody if you accept his own words, but, of course, those words created a very difficult situation, as any solicitor defending him realizes, and the solicitor, whoever it may have been, knew his business, because he thought it was a position which had to be fortified, if possible, and from which escape must be made, if possible, so he took him to a psychologist. I am sure everybody was delighted to see Mr Z here, and to hear his evidence. He is a psychologist, and you know what he said. Far be it from me to in any way belittle this science of psychology. How far it has got it is very difficult to say, but one cannot shut one's eyes to the facts in this case. The psychologist is called in to deal with a very difficult situation, because that phrase has got to be dealt with somehow or other. It is dealt with in this case by Mr Z, whose evidence, of course, nobody suggests is not given utterly and completely in good faith. He says he has got a simple mind, and his intelligence is not as high, perhaps, as that of some other people, and that when C himself says that he meant that that phrase should apply to other matters, that is a very likely thing to have happened. C, covered by Mr F, who faced this situation with the utmost gallantry, said that when he said "I knew the stuff was not straight" he meant it was not presented with coupons, or things of that kind.

Well, members of the jury, you will, of course, not construe against a man words which he uses in any harsh sense. On the other hand, if you think that this man, when he said "I knew the stuff was not straight", was using language in its ordinary application, there is an end of the matter: of course he has a guilty mind.

I think I have made it perfectly plain to you that in the case of receiving charged against this man C, you have to be satisfied that at the time he came into possession of this property he knew it was stolen;

it was recently stolen property, very recently, and, as I say, that in itself is evidence of a guilty mind, subject to this, that if he gives an explanation which may be true, although you are not convinced that it is true, if it is consistent with innocence he would be entitled to be acquitted. I repeat that, because it is important.

Now, there is his explanation, and added to it is the evidence of Mr Z. If you think that that does not help you very much, or that psychology, as applied to this case, has not yet advanced sufficiently far to make black white—because that is really what it comes to—then the position is that this man has said: "Yes, I got this stuff; I turned it into money, a good profit, and I knew that the stuff was not straight." Anything much clearer than that of receiving stolen property I should think it would be difficult to find. I do not know.

The police officers have been asked about this man's intelligence, and they gave you their version. You heard his spirited replies to G and you can judge for yourselves whether the man is a nitwit and does not know what he is doing, and all the rest of it, as you have heard to-day. The police—I think it was Sgt. S—said he could not detect any deficiency in this man's intellect. When I asked him to compare it with the Metropolitan Police Force, he said it was better than a constable and even up to the high standard of a sergeant. That is a tribute to one's mentality, I should imagine; or is it?

The first case was heard over a week later; the evidence is again given in full but other witnesses were called for the defence, notably Mrs C and C's brother.

THE PSYCHOLOGIST (*examined by the Counsel for Defence*):

Q. Was C brought to see you in January this year?
A. Yes.
Q. I think he was brought by his wife, was he?
A. His wife accompanied him.

THE COMMON SERJEANT:

Q. This year, 1942?
A. Yes.
Q. After he had been charged with all this?
A. Yes, after the police court hearing he came with her.

COUNSEL FOR DEFENCE:

Q. Will you just tell his Lordship and the jury what tests, if any, you put him through, and what report you are able to make concerning him, knowing the facts that are alleged against him in this case?

A. My Lord, I saw him on the 7th January for an interview of about an hour and a half, and I gave him an examination with the purpose of finding out his intelligence. Because of his being Italian, I gave him both a performance test and a verbal test. Incidentally I gave him a test which is used a great deal in the Army at the moment. The verbal test is a test which has been standardized and used in all clinics in the country. On those tests he worked out at having a mental age of seven years one month, and taking that in ratio with his intelligence, he has an I.Q. of 47. I found he was well within the imbecile group on that scale. The average person has an I.Q. of 100.

THE COMMON SERJEANT:

Q. Is he a mental deficient?
A. I think he is mentally deficient intellectually.
Q. Have you suggested he should be so certified?
A. It is my personal opinion, for his protection, he should be so certified.
Q. As a mental deficient. You are not suggesting he is insane?
A. I am not suggesting he is insane.
Q. Are not most criminals mentally deficient?
A. I did draw a distinction—intellectually deficient.
Q. Yes, very well.

COUNSEL FOR DEFENCE:

Q. When you say seven years is his mental age, does that mean, or does it not mean, that he can do just the same things as a child of seven, or is he subject to a test of a different nature?

A. I contend that he has the comprehension of a child of seven years, although he must have greater experience of the world.

THE COMMON SERJEANT:

Q. He seems to be able to make a very good bargain in the selling of stuff?

A. Yes, my Lord, I am not sure he understood what he was doing, but he certainly has made a good bargain, I quite agree.

COUNSEL FOR DEFENCE:

Q. Is that so?—to lose £490.

THE COMMON SERJEANT:

Yes, he did not agree the first price, you know. He seems to have had plenty of intelligence when he was doing the bargaining over the corned beef sale. It is a matter for the jury.

COUNSEL FOR DEFENCE:

Q. When you put him through the tests, can you say whether or not, so far as you could tell from your experience, that he was trying to exaggerate his deficiency. Having seen him here to-day would give you a perfectly fair opportunity of judging, did you think he knew why he was being examined by you, or not?

A. I do not think he did know the purpose of the tests at all.

THE COMMON SERJEANT:

Q. You have seen him give evidence here to-day?

A. Yes.

Q. Are you suggesting that that man is not perfectly competent to know whether he is doing right or wrong?

A. I am not answering as to whether he knew he was doing right or wrong; I did not understand I was called on those grounds.

THE COMMON SERJEANT:

That is what the jury have got to decide, that is all.

COUNSEL FOR CROWN:

Q. Was he brought to you by his solicitor?

A. Yes.

Q. Did he understand why he had been brought to you?

A. No, I do not think he did.

Q. In connexion with to-day's proceedings?

A. No, I do not know about that.

THE COMMON SERJEANT:

The real point in this case is whether the jury are satisfied he knew these goods were stolen.

A. Yes, I do understand that, my Lord.

(The witness withdrew)

THE COMMON SERJEANT'S SUMMING UP (with reference to the psychologist's evidence):

The case for the defence is: How can you find him guilty of knowing these cases were stolen? He is mentally deficient. Mr Z who is a psychologist was called before you. He said that his intelligence is very low indeed. His mental age is that of someone seven years of age; he is intellectually and mentally deficient. His wife was called, and she said what you may think to be absolutely true—he is very easily led. He cannot write apparently, and he cannot read, but you may know, members of the jury, that a large number of men have been able to accumulate large fortunes, some quite properly and some improperly, who can neither read nor write, but it is for you to judge. You have seen this man, you have seen him give evidence, and you have heard the evidence given with regard to him by the other witnesses. He took a very active part—a very active part—in these proceedings.

C was found guilty by the jury in the clothing case but not guilty in the corned beef case. This is somewhat surprising as the psychologist's evidence was received in greater detail in the clothing case and seemed to have made a considerable impression. It may well be however that for the judge and jury such evidence needs the corroboration of other

people in intimate contact with accused, and that the testimony of the wife and brother turned the scales in the one case, whereas in the other the cold evidence of intelligence quotient did not affect the cockles of their hearts. It must also be remembered that juries *per se* are a variable quality.

V. The establishment of the credentials of the psychologist

It will have been noted that the Recorder commented that "there was no degree in psychology", which remark is actually incorrect, but which points to a certain difficulty in establishing the qualifications of a psychological expert witness.

A copy of the Medical Register is evidence of the due registration of medical witnesses. A copy of the Register of Veterinary Surgeons is *prima facie* evidence of registration and qualification as a Veterinary Surgeon. It would seem that firstly, Membership, either as an Associate or Fellow of the British Psychological Society, should be established, if necessary by the production of the Register of Members, and secondly, that the particular qualifications and appointments of the witness be given.

VI. The scope of the psychologist's evidence

The witness gives evidence simply as to the intelligence of the person charged; he is not concerned with his sanity or otherwise, which is the province of the psychiatrist, nor is he concerned with the state of mind of the accused when he actually did the act under consideration, which is, of course, the question to be left to the jury.

He can give it as his opinion that it is possible for certain facts not to convey certain implications to persons of limited intelligence which they would ordinarily convey to persons of average intelligence and that, for example, it is unlikely for a person with a low mental age to be able to comprehend the intricacies of modern business. However the actual relation of intelligence quotient to employment and the ability to hold jobs and carry on business is so indefinite that it would be advisable to wait until the relationship has been defined, if in fact it ever can be, before drawing inferences from the intelligence quotient which may be belied by the actual facts of the case.

VII. Discussion

I have considered under an earlier heading certain cases in which knowledge of the I.Q. of the accused would be of assistance to the court. It may well be also that when mental deficiency is urged as a defence, under the cloak of insanity, the evidence of a psychologist will be required, as the actual testing is being left more and more in the hands of the psychologist and he and he alone can give evidence as to what he has found out. It is to be hoped that the position will never arise in which conflicting evidence as to intelligence quotient is given; when the psychologist on behalf of the prosecution urges an I.Q. which is challenged by the psychologist of the defence. The I.Q. may be a psychologist's private property, but it will lose the confidence of the world at large and the court in particular if it becomes a matter of dispute in full court. If discrepancies occur, particularly at this early stage, the dispute should be settled out of court.

VIII. Summary

This paper is concerned with the psychologist as an expert witness. Two cases are described in which evidence as to the intelligence of a person has been admitted in a court of law. The scope and value of such evidence and the establishment of the credentials of the witness are also considered.

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HEAD'S CONCEPT OF THE SCHEMA AND ITS APPLICATION IN CONTEMPORARY BRITISH PSYCHOLOGY

Part III. BARTLETT'S THEORY OF MEMORY

By R. C. OLDFIELD and O. L. ZANGWILL

I. *Schemata and the problem of memory* (pp. 113–120): (1) *The problem for Bartlett* (pp. 113–115); (2) *Comments on Head's views* (pp. 115–116); (3) *Definition of schema* (p. 116); (4) *Development of schemata* (pp. 116–117); (5) *Schematic determination of response* (pp. 117–118); (6) *Chronological organization and rote revival* (pp. 118–120). II. *Bartlett's theory of remembering* (pp. 120–129): (1) *The reconstructive aspect of recall* (pp. 120–122); (2) "*Turning round*" *upon the schemata* (pp. 122–125); (3) *Orientation and attitude* (pp. 125–127); (4) '*Dominant detail*' *and the function of images* (pp. 127–128); (5) *Temperament and personality* (pp. 128–129). *References* (p. 129).

I. Schemata and the problem of memory

Indications that the concept of the schema may be turned to good account in the elucidation of some at least of the numerous problems presented by memory will have been apparent throughout the whole of the preceding discussion.[1] It is not, however, until the publication, in 1932, of *Remembering*, that we find the first thoroughgoing attempt to elaborate the notion of the schema into a comprehensive theory of memory. Though Bartlett himself acknowledges in his preface that his debt to Sir Henry Head "will be obvious to everyone who reads this book", yet his theory as finally presented involves so extensive a reinterpretation of Head's position that it plainly requires treatment as an essentially original contribution.

(1) *The problem for Bartlett*

Two features of the phenomena of remembering, both of them neglected by earlier writers, presented themselves to Bartlett as demanding theoretical interpretation. The first of these is the demonstrable fact that past experience may, and frequently does, operate *en masse*—its operation cannot *prima facie* be supposed to consist in specific revivals of specific past events. This fact is revealed clearly by his earlier experiments on perceiving and imaging ((1), chaps II and III). Secondly, recall must essentially be regarded as a 'reconstructive', rather than as a 'reproductive' process. That is to say, accuracy in recall is to be regarded as a positive achievement of the organism, in contradistinction to older views, which suggested that inaccuracy is a mere breakdown of function.[2] Such a view of recall is amply borne out by Bartlett's later experiments on successive and serial reproduction ((1), chaps. V, VI, VII). Just as, in practice, Bartlett admits to extreme dissatisfaction with the Ebbinghaus technique of rote learning as a means of investigating the phenomena of memory in general, so, in theory, does he obviously consider the prevalent doctrine of 'memory traces' to be totally inadequate as a basis for explanation of his own results.

[1] Vide Part II, Section II of this essay.

[2] Cf. Hume: "It is evident, that the memory preserves the original form, in which its objects were presented, and that wherever we depart from it in recollecting anything, it proceeds from some defect or imperfection in that faculty"(3).

Bartlett's main objection to the theory of traces is that it involves the assumption that each trace must retain its own essential individuality. On such a theory, recognition must necessarily consist in the re-excitation of simple trace-patterns, whilst remembering would have to be regarded as a purely reproductive function. Now a study of the 'actual facts' of perceiving and recognizing strongly suggests that, "in all relatively simple[1] cases of determination by past experiences and reactions, the past operates as an organized mass rather than as a group of elements each of which retains its specific character" ((1), p. 197). Consequently, Bartlett believes, "if we are to treat remembering as a biological function, it looks as if a sound rule of method would compel us to approach its problems through a study of these relatively less complex cases of determination of present reactions by the past" ((1), p. 197).

The immediate problem thus becomes one of the analysis of response determination in cases in which the operation of past experience is more straightforward and more immediate than in the case of reconstructive recall. In conducting such an analysis, Bartlett was evidently struck by the analogy between the essential phenomena involved, and those of sensation, and in particular, postural appreciation, as described by Head. Thus, in recognition and perception, the process is not mediated by the revival of specific images. The product of the present stimulus, and the past, thus acting *en masse*, may be said, in Head's words, "to enter consciousness already charged with something that has gone before". More specifically, Bartlett had already pointed out in his previous chapter (IX) that very generally in perceiving, and almost always in recognizing, the psychological material which persists from previous occasions must be regarded as 'matching' some immediately presented sensory pattern. Now the uses made both by Head and by Bartlett of the term 'matching' are obscure, and perhaps inexpedient. But we may say with confidence that, whatever may have been the precise meaning attached by either of them to this term, it was *not* intended to suggest any simple conscious comparison of image and present sensation. It does not, therefore, lead us back to the trace-revival theory. Matching, as envisaged by Bartlett, involves functionally an identification of *pattern* in the present stimulus with that existing in the organized mass of past experience. And this latter pattern is no mere reflexion of the pre-existing structure of a specific past impression, but is essentially the expression of an active process of organization.

The question at issue is now: What sort of organization, or mode of integration, of past experiences would render possible both the 'matching' process itself, and the operation of past experience as an organized whole? It is in his attempt to discover an adequate solution to this question that Bartlett introduces the notion of the schema.

Before we turn to the consideration of the comments upon Head's theory with which Bartlett prefaces the exposition of his own views, it is desirable to consider briefly how far he has reasonably taken the measure of the 'trace' type of theory. It may perhaps be contended that he has been unduly severe in his estimate both of what is necessarily involved in such a view, and of what its upholders did in fact maintain. The implications of trace theories cannot form the subject of any lengthy discussion here, but we may point out in the first place that what we may conveniently call the 'postulate of main-

[1] It must be pointed out, however, that universal agreement would probably not be forthcoming for the view that recognition and perception are necessarily simpler than recall. For instance, what may be called 'comparison' theories of recognition would appear to imply the opposite.

tained independence and specificity of traces' does not by any means seem to be indispensable to a trace theory *per se*. Indeed, it is one deliberately rejected without immediate disaster by exponents of the Gestalt Theory. Secondly, the hypothesis that recognition and perception are mediated by specific revivals in the form of images does not necessarily imply that in no sense is there organization of past experience, nor that such organization may not, in other connexions, be of functional significance. Thirdly, it would seem to be doubtful whether early upholders of trace doctrines, however definitely they may have been constrained in their writing to employ the concept of the independent, specific, trace, truly foreswore principles of organization in their thinking. As we have seen, it was in this respect that Head's reading of Munk differed from what Munk actually wrote. Indeed, broadly speaking, the position of Bartlett in relation to exponents of the trace theory is not unlike that of Head *vis-à-vis* Munk and his followers. Misinterpreting their opponents, both have nevertheless introduced a significant and, as we believe, valuable change of attitude towards the problems in question.

(2) *Comments on Head's views*

Bartlett presents a brief exposition of Head's theory, to which he appends some critical comments. The first of these concerns the shortcomings of the storehouse notion as employed by Head. "Secondly", Bartlett observes, "Head constantly uses the perplexing phrase 'rising into consciousness'. It may be the case that in exceptional circumstances an unwitting alteration of position is actually known as a 'measured' postural change, but this is not the rule" ((1), p. 200). In this passage, Bartlett has laid his finger upon what is perhaps the most formidable difficulty that arises if we attempt to extend Head's theory to the explanation of response determination in general. The question at issue is that of whether or no Head intended to assert that conscious awareness of 'measured' postural change is an invariable prerequisite of postural adjustments. Bartlett evidently thinks that Head did mean this, and indeed, in his frequent discussion of postural *regulation*, the whole emphasis is laid upon the character of postural *appreciation and recognition* as if to imply that the latter is both necessary and sufficient for postural adaptation in general. If, then, this is the view which Head intended to maintain, Bartlett is justified in pointing out that "...every day, many times over, we make accurate motor adjustments in which, if Head is right, the schemata are active, without any awareness at all, so far as the measure of the changing postures is concerned" ((1), p. 200). But it is not quite clear that Head did in fact intend to make the conscious awareness an indispensable part of the mechanism. And it seems to us reasonable to maintain that what he has written may be interpreted in the following alternative sense: (1) Under certain conditions, notably those in which recognition of posture and appreciation of passive movement are demanded, the nature of the event in consciousness requires that the underlying physiological process shall have a certain character. (2) The examination of such a conscious event can therefore form the basis of assumption regarding these underlying physiological mechanisms which in general provide postural regulation. Now in these two propositions there is no implication that the conscious event is necessarily involved, nor is there any suggestion that Head intended to give any complete account of the mechanism of response determination as a whole. All that he is concerned with is to elucidate some of the physiological factors which must underlie the regulation of posture, and this he proposes to do, failing other means, by the analysis

of those conscious processes which are sometimes concomitant. Colour is certainly lent to some such alternative interpretation of Head's position by his views upon the maintenance of static tone (vide Part I, § III of this essay). In this connexion the schemata operate by their 'simple existence', and the interpretation put by Head upon static tone strongly suggests that if schemata are capable of *maintaining* it, then they should, when reacting with incoming peripheral impulses, be able to bring about without reference to consciousness, the postural changes whose possibility is guaranteed by the existence of the static tone. It would seem possible, then, that Bartlett is in error in supposing that Head, because he was constrained to make use of conscious awareness in order to analyse some of the mechanisms involved in postural regulation, believed that it was indispensable to that function. It is true to say that Head's theory cannot provide an explanation of the mechanisms of motor habit, but it is possibly equally true that Head never intended that it should.

Lastly, Bartlett takes exception to the term 'schema' itself: "It is at once too definite and too sketchy.... It suggests some persistent, but fragmentary, 'form of arrangement', and it does not indicate what is very essential to the whole notion, that the organized mass results of past changes of position and posture are actively *doing* something all the time; are, so to speak, carried along with us, complete, though developing, from moment to moment" ((1), p. 201). He suggests that the expression "active developing pattern" might be introduced in place of the term 'schema', but "the word 'pattern', too...has its own difficulties; and it, like 'schema', suggests a greater articulation of detail than is normally found" ((1), p. 201). Bartlett concludes that although the term 'organized setting' approximates most closely and clearly to the notion required, he will "continue to use the term 'schema', when it seems best to do so", but with a more specific definition as to its application.

(3) *Definition of schema*

Bartlett presents a definition of the 'schema' as "*an active organization of past reactions, or of past experiences, which must always be supposed to be operating in any well-adapted organic response*" ((1), p. 201, italics ours). He believes that whenever there is any order or regularity of behaviour, "*a particular response is possible only because it is related to other similar responses which have been serially organized, yet which operate, not simply as individual members coming one after another, but as a unitary mass.* Determination by schemata is the most fundamental of all the ways in which we can be influenced by reactions and experiences which occurred some time in the past" ((1), p. 201).

It is at once evident that Bartlett's conception differs from that of Head in a number of important respects. Indeed it might reasonably be said that little has been taken over from Head except the general principle that the factors, whatever they may be, which allow the past to operate in the present must be supposed to be actively organized in some way or another.

(4) *Development of schemata*

Bartlett next proceeds to outline the development of the schemata. The earliest principle of schematic organization is that which we have called the *modal*. Thus organization takes place along the lines of sensory modality in its commonly accepted sense. At a higher level, however, a new principle of organization is introduced. This we may call

organization through continuity of interest.[1] The experiences connected with an interest such as sport, literature, science, or philosophy, tend to become organized into unitary schemata.

(5) *Schematic determination of response*

Further light is thrown upon the notion that Bartlett has in mind, by his description and interpretation of a number of instances of behaviour which he supposes to manifest schematic determination. In the first place he analyses the performance of the rapid postural adjustment character of a stroke in a quick game, such as tennis or cricket. "How I make the stroke depends on the relating of certain new experiences, most of them visual, to other immediately preceding visual experiences and to my posture, or balance of postures, at the moment. The latter, the balance of postures, is a result of a whole series of earlier movements, in which the last movement before the stroke is played has a predominant function. When I make the stroke I do not, as a matter of fact, produce something absolutely new, and I never merely repeat something old. The stroke is literally manufactured out of the living visual and postural 'schemata' of the moment and their interrelations. I may say, I may think that I reproduce exactly a series of text-book movements, but demonstrably I do not; just as, under other circumstances, I may say and think that I reproduce exactly some isolated event which I want to remember, and again demonstrably I do not" ((1), pp. 201–202).

It is plain that such a statement as this is intended to convey indirectly, rather than explicitly to state, the point at issue. The essential characteristics of the tennis stroke which Bartlett is concerned to emphasize would appear to be the following: (1) It is essentially a novel performance, and cannot be treated as the revival of some previously engrained specific piece of behaviour. (2) In so far as the stroke manifests skill, what has been learnt through past experience is *not the stroke itself*, although we may properly be said to have learnt *how to make* the stroke. (3) Whatever factors must be supposed to determine the making of the stroke must be conceived as operating essentially within the living circumstances of the moment, especially in their aspect of being continuously related to those that preceded them. The stroke itself must be conceived as the causal outcome, not of a single momentary state of the organism, but of a continuous sequence of states.

These points conceded, Bartlett invites us to concede also that the processes leading to the stroke must in some sense be based upon an organization of circumstances both immediate and remote, in the temporal sense, which is fundamentally 'schematic' in nature. But in doing so he advances to a further position, one which may be regarded as subject to some considerable degree of doubt. For the sense in which he regards the stroke as based upon the living visual and postural schemata of the moment is that *it is "literally manufactured out" of them.* Head's postural schemata, one may recall, represent exclusively *sensory* dispositions, and it is difficult to understand how they can be in themselves responsible for the actual production of the final motor response. Bartlett, it is true, in his definition of the schema, treats the notion of *response* as that

[1] The influence of James Ward on this aspect of Bartlett's thinking has been well brought out by Northway in the first of her two recent papers (5) on "The concept of the 'schema'". It is our misfortune that Dr Northway's contribution appeared only after this essay had been completed. As we are unable to take it into account in the text, it is earnestly hoped that the reader will study Dr Northway's enlightening work in close conjunction with this section of our own.

which is organized, and appears often to use the terms *response* and *experience* interchangeably in speaking of the building of schemata. It would seem that his concept of *experience* is a peculiar one, having reference beyond the traditional idea of passive happening, and implying a functional unity of all the processes in the organism in a given situation. Whether such a conception be ultimately justifiable or not, it cannot but lead to difficulty at a later stage when it is desired to treat *experiences* as *psychological material*, capable of revival as images, or of reconstruction in recall.[1]

(6) *Chronological organization and rote revival*

Bartlett next proceeds to a discussion of the chronological conditions of schematic organization, which in turn leads on to his theory of rote revival. "If Head is right", he states, "'schemata' are built up chronologically. Every incoming change contributes its part to the total 'schema' of the moment in the order in which it occurs. That is to say, when we have movements *a*, *b*, *c*, *d*, in this order, our 'plastic postural model' of ourselves at the moment *d* is made depends, not merely upon the direction, extent, and intensity of *a*, *b*, *c*, *d*, *but also upon the chronological order in which they have occurred*" (italics ours). "Suppose", Bartlett continues, "...that a 'model', to continue to use this picturesque phraseology, is completed, and all that is needed is its maintenance. Since its nature is not that of a passive framework, or patchwork, but of an activity, it can be maintained only if something is being done all the time. So in order to maintain the 'schema' as it is—though this is rather inaccurate language—*a*, *b*, *c*, *d* must continue to be done, and must continue to be done in the same order" ((1), p. 203).

It is a matter of some difficulty to determine precisely what is meant by this suggestion. In the first place, it does not obviously follow that because the maintenance of the schema demands that 'something' be 'done all the time', that that something must necessarily consist in the rehearsal of the series of acts *a*, *b*, *c*, *d*, which are the result of the functioning of the schema. It might be that the continued activity of other schemata would suffice. Secondly, in saying that "*a*, *b*, *c*, *d* must continue to be done", does Bartlett mean (*a*) that a series *a*, *b*, *c*, *d*, etc. must be *repeatedly* rehearsed, the end term leading straight back to *a* without intermission, or (*b*) that a series *a*, *b*, *c*, *d*, must be *frequently* rehearsed, but with gaps between one rehearsal and the next, or (*c*) that a series *a*, *b*, *c*, *d*,...*p*, *q*,... must continue throughout the life of the organism? The distinction between these three possibilities is of some significance. For if the second alternative (*b*) be chosen, then it is difficult to see how such choice can be consistent with the stated condition that a schema, being of the nature of an activity rather than a passive framework, can be maintained only when something is being done *all* the time. If the first alternative be chosen, it is not clear how, in the building process, the last term in the series came to evoke the first term afresh. And if such evocation were not laid down previous to the period in which the schema is merely being maintained, it

[1] Prof. Bartlett has since told us that it was not his intention to use 'experience' and 'response' as interchangeable terms. He urges that 'experiences' demand treatment, not as processes, but as the *products* of reactions which may themselves be used as *material* for further reaction. In formulation, for example, the 'thought' is to be regarded as the response and the sentence produced as the material. It would seem, then, that psychological material is to be viewed as the product of reaction and may presumably be equated with that which is experienced. Schemata, on this interpretation, would presumably have the character of *functional* dispositions which may predispose the individual to certain kinds of experience. As Prof. Bartlett has not published his more recent views on these questions, we shall not go beyond his position as stated in *Remembering*.

evidently cannot be used to explain that maintenance. The third alternative is one which is not subject to either of these objections. But it has its own difficulties. How can we conceive of an indefinitely prolonged series of acts unless the building process equally involved such series?

It would appear that part of what Bartlett intended to emphasize is the fact that when once a schema has become established, and is in a state which requires only maintenance and no further development, then, if circumstances arise in which the series of acts is evoked, the whole series will be run off, in its proper order, and it will be impossible to pick out any one act of the series without rehearsing the whole series. This much would seem to be inherently plausible and to be borne out by the experience of everyday life. But he also appears to wish to relate this fact to the general question of how it is that schemata, once developed, are maintained. And here we must confess that we are unable to follow him.

Bartlett believes that there are a number of cases in real life which approximate to this theoretical picture. First, he calls attention to the somewhat rigid reminiscence supposed to be characteristic of senility. "There is the old man whose adventures are over, whose model is full-grown and completed, who shuns or ignores the spur of a new environment, and who maintains himself comfortably by constant, almost word-perfect reminiscence." Secondly, "there is the low-level mental life which, being cut off from all but a few often-repeated environmental stimuli, shows unusual rote memory" ((1), p. 203). Now all relatively low-level remembering tends in fact, Bartlett suggests, to be rote remembering, and rote memory, the repetition of a series of reactions in the order in which they originally occurred, is, according to him, *the most natural way of maintaining a completed schema as far as possible undisturbed.*[1]

This then is the essence of Bartlett's theory of rote recall, that it represents the maintenance of schemata already built. It certainly calls for some comment, and we may offer the following: In the first place, it is not immediately clear what it is that determines that schemata shall cease to be developed and shall enter a period of mere maintenance, nor what the biological significance of this 'change of life' may be. And connected with this difficulty is the fact that Bartlett gives no indication as to how the schema, which by definition is a 'general setting, pattern, or framework', can become differentiated into specific constituents temporally related and capable of exact and rigid sequential reproduction. This latter problem furnished the origin of a special investigation, conducted by the present writers, and described in full elsewhere(6). In the third place, Bartlett's position might have been clearer had he defined more closely the type of 'low-level' mental life that he is considering. For it is essential to distinguish behaviour which, viewed from an anthropocentric standpoint, appears to be extremely

[1] Prof. Bartlett has told us that he is partly indebted to W. H. R. Rivers for the view that reversion to a serial mode of reaction characterizes senile and 'low-level' mental life. Though there are many indications of the truth of such a view, we cannot refrain from commenting that the evidence is at present far from satisfactory. Perhaps the nearest analogue to the situation demanded by Bartlett is the phenomenon, often met with in aphasia, of inability to respond serially except by repetition of the required sequence *in toto*. Thus an aphasic patient who is interrupted whilst counting is often unable to proceed except by reverting to one and repeating the series from the beginning. A comparable state of affairs is sometimes to be seen in the performance of a normal person learning a new combination of movements. In the deterioration of memory, on the other hand, the problem appears to be much less simple. One need only call attention to its well-known retrogressive character and to the fact that it is so often complicated by fabrication. We hope in future papers to discuss the concept of the schema in its bearing on problems of deterioration.

simple and sequential, from behaviour which has *become* simple, mainly in that it has become rigidly sequential, crystallizing out from something more complex and fluid. In the former case it is not clear that the simplicity which we perceive is the outcome of a previous process of schema building. One may presume that in speaking of 'low-level' mental life Bartlett has in mind such behaviour as that associated with parenthood in birds, or so-called 'instinct' in insects. Viewed from our own standpoint, such behaviour may undoubtedly seem to consist in a rigid, unbreakable, train of responses. But it cannot properly be suggested that such a train is built up from previous experience. Indeed, the evidence points to an inverse relation between behaviour-sequence and experience. Again, although sometimes rigidly sequential in its main aspects, the behaviour in question is infinitely variable in its finer details, and this variability is adaptive and would seem, indeed, to demand some kind of application of the notion of schemata for its explanation.[1] Lastly, it must be pointed out that the hypothesis of a rigid 'model', which can be 'run off' as occasion demands, is a concept of a very different order from the continuously developing plastic schema postulated by Head.

II. Bartlett's theory of remembering

(1) *The reconstructive aspect of recall*

Having thus, with the aid of the concept of the schema, interpreted the types of adaptive behaviour whose chief character lies in the immediate utilization of the past *en masse*, Bartlett now turns to his second task. This is the elucidation of the manifestly reconstructive aspect of recall. In order to approach this task, he draws attention to a further feature of the schema to which he attributes particular importance. This is what he calls *the predominant influence of the latest incoming constituents of a schema*. "In its schematic form", he writes, "the past operates *en masse*, or, strictly, not quite *en masse*, because the latest incoming constituents which go to build up a 'schema' have a predominant influence" ((1), p. 202). Here Bartlett seems to have in mind responses of the type discussed above in the analysis of a tennis stroke, in which the immediately preceding postural changes must obviously play a predominant part in the determination of the subsequent response. Though never explicitly stated by Head, this notion of the relative predominance of the latest incoming schematic constituents would appear to follow readily from his general theory. For it does seem necessary to assume that, although immediate awareness of alteration in position presupposes relation of present postural sensations to the whole framework of the past as represented by the appropriate postural schema, it is nevertheless the immediately preceding postural changes recorded on the schema which in large part determine the nature of the data presented to consciousness. Whether this relation of the immediately preceding to the more remote can properly be characterized as one of *greater importance*, rather than one of *difference of type of determination*, is a question we need not consider here, although it seems to us to be one which will eventually require elucidation.

Now this "determination by the massed momentary effect of a series of past reactions in their chronological character, with the last preceding reaction playing a dominant

[1] Wolters ((9), p. 143) has indicated some very general points of similarity between 'instinctive' and 'schematic' activity. His concept of the 'schema', however, differs in certain important respects from that of Head and Bartlett (see Part IV of this essay).

part" ((1), p. 203) has obvious biological disadvantages. As Bartlett justly observes: "An organism which possesses so many avenues of sensory response as man's, and which lives in intimate social relationship with numberless other organisms of the same kind, must find some way in which it can break up this chronological order and rove more or less at will in any order over the events which have built up its present momentary 'schemata'. It must find a way of being dominantly determined, not by the immediately preceding reaction or experience, but by some reaction or experience more remote.... If we could only understand how an organism achieves this, we should have advanced some way towards solving certain of the problems of memory, for in remembering we are being determined by events out of their precise order in a chronological series, and we are free from over-determination by the immediately preceding event" ((1), pp. 203–4).

Having thus laid down, in terms of his concept of the schema, the demands that are made upon the high-grade organism, Bartlett indicates the empirical facts which reflect their satisfaction. Primarily these facts are those of the predominantly 'constructive character' of recall. Literal recall of past events is the exception rather than the rule; and, he points out, is of little importance. "Remembering appears to be far more decisively an affair of construction than one of mere reproduction" ((1), p. 205). Such a statement implies, not that literal recall is employed as far as it will reach, gaps being filled in by a reconstructive process, but that correct, literal, recall is also the product of the reconstructive process. "In remembering, the subject uses the setting, or scheme, or pattern, and builds up its characteristics afresh to aid whatever response the needs of the moment may demand" ((1), p. 196). More generally there is *reaction to*, as opposed to *reaction by*, psychological material.

How is this manifestly constructive character of recall to be explained in terms of the theory of 'schemata'? Bartlett attempts to answer this question by approaching the whole problem of memory along the lines of emergent evolution. First of all, he invites us to consider an organism "which has only a few sense avenues of connexion with its environment, and only a few correlated series of movements, but is devoid of all the so-called higher mental functions" ((1), p. 205). "To this organism", he claims, "Head's notions...have the most perfect applicability. Any reaction of such an organism which has more than a mere momentary significance is determined by the activity of a 'schema' in relation to some new incoming impulse set up by an immediately presented stimulus. Since its sensory equipment and the correlated movements are very limited in range, and since the mode of organization of the 'schema' follows a direct chronological sequence, circularity of reaction, the repetition over and over again of a series of reactions, is very prominent. Habits...are relatively easily formed....From the outside, all this may look like the continual re-excitement of well-established traces; but it is not. It is simply the maintenance of a few 'schemata', each of which has its natural and essential time order" ((1), p. 205).

Regarding this passage, we may point out in passing that the applicability of Head's notions to the example in question appears to us to be far from perfect—in fact to be highly dubious. For in the first place, as has already been pointed out, it is difficult to see that Head's theory can, by itself, provide any account of the whole mechanism of response determination. Secondly, it would seem extremely doubtful whether Head would subscribe to any such view of schemata, which he regarded as especially connected with the latest product of neural evolution, the cortex, and which he showed no tendency

to apply at subcortical levels, even in cases where the behaviour in question might well seem to demand the operation of the past *en masse*. In the third place, it is again not clear to us precisely what kind of 'low-level' organism Bartlett has in mind. But in any low-level organism, how far is it just to speak of 'circularity of reaction'? Lack of an extensive repertoire, and a simplicity of tactics which is often lethal, there may be. But it may well be that these ought to be regarded as the product rather of the simplicity of the environment in which the organism has its being, than of any organization of tendencies within the organism itself. Regarded in detail, too, and in relation to the organism's environment, how far is there true circularity of response? And again, how far is it really true to say that "habits are relatively easily formed"? On the face of it, the experience of those who perform experiments upon such organisms rather suggests the opposite.

On a higher evolutionary level, the special sense avenues are increased in number and in range, and there is a concurrent increase in the number and variety of available responses. "With this, and a matter of vital importance...goes a great growth of social life, and the development of means of communication" ((1), p. 206). This development of social communication Bartlett believes to result in the 'schematically' determined reactions of one organism being repeatedly checked, as well as constantly facilitated, by those of others. "All this growth of complexity makes circularity of reaction, mere rote recapitulation and habit behaviour, often both wasteful and inefficient. A new incoming impulse must become not merely a cue setting up a series of reactions all carried out in a fixed temporal order, but a stimulus which enables us to go direct to that portion of the organized setting of past responses which is most relevant to the needs of the moment" ((1), p. 206).

(2) *"Turning round" upon the schemata*

Bartlett believes that there is one way, perhaps the only way, in which the organism can obviate rigid determination by past experiences operating in the form of a chronological series. "At any rate, it is the way that has been discovered and it is continually used. *An organism has somehow to acquire the capacity to turn round upon its own 'schemata' and to construct them afresh. This is a crucial step in organic development. It is where and why consciousness comes in; it is what gives consciousness its most prominent function*" ((1), p. 206. Italics ours).

This somewhat peculiar suggestion evidently stands in need of such elucidation as we are in a position to give. Perhaps the first and foremost difficulty in the conception is that no indication is afforded of the mechanism of the "turning-round" process. It would seem that the organism has 'somehow' acquired this capacity, but unless an account can be given of the nature and genesis of it, does Bartlett's suggestion amount to saying more than that the organism has in fact ridded itself of inevitable determination by the massed effects of past events chronologically organized? And does *this* amount to saying more than that the organism remembers? We shall see later that Bartlett does give some indication, not perhaps of the fundamental nature of the "turning-round" process, but of some of the events that are involved in it.

In the second place, the organism is said to turn round upon its own schemata, and to construct them afresh. Bartlett never defines the term 'organism', but it is at least quite clear that he does not mean by it simply the organism in its purely physical aspect.

In its character of being capable of making adaptive responses to its environment, the organism possesses schemata. But it is not made clear by Bartlett whether we must postulate some *tertium quid*, something in the nature of an ego. If not, then it would seem that the organism comprises two aspects, the purely physical, and the schematic. In this case it must be the totality of schemata which turns round upon itself, or part of itself. And this is evidently a very difficult conception. A possible way out of the difficulty would consist in the development of a special theory of the segregation of a particular set of schemata to form something which we might call an 'ego-bundle', together with the assumption that it is this which is active in the "turning-round" process.[1] If, on the other hand, we are to postulate a true ego, existent in its own right and independent of the formation of the schemata,[2] then this apparently has no function but that of turning round upon the schemata—a function which has lain dormant until the 'discovery' of its possibilities in creating consciousness and mediating recall. We shall see later that, in his application of the notion of the schema to the problems of thinking, Wolters has reformulated the theory in a manner which avoids at the least the most glaring difficulties of Bartlett's statement.[3]

A third question is that of the precise relationship between consciousness and the schema. What does Bartlett mean by saying that the emergence of the turning-round process "...is a crucial step in organic development. It is where and why consciousness comes in; it is what gives consciousness its most prominent function"? It is true that an organism that is always determined in its behaviour by the continuously unrolling schemata would, one must presume, have no awareness of the manner in which the past is operating in producing its responses. It must live only in the moment, the continuity of its being reflected only in the organization of its schemata. But we must ask also whether it might not have awareness of the changes in its state *as they occur*? The awareness of each momentary state would, it is true, be lost for ever with the passage of this state into the next. But is it not possible to conceive of such a mode of experience? Perhaps the nearest analogue which suggests itself is provided by the awareness of a series of postural changes as envisaged by Head. Here, awareness of altered position is immediate, yet the postural sensations rise into consciousness already charged with the relation to what has gone before. And, as each state passes, it is effectively lost to the organism. Its nature is not available for direct recall except in a very sketchy and frequently inferential form. The first question is that of whether or no we can imagine that an organism, prior to the discovery of the "turning-round" process, could have such a form of 'moment to moment' awareness, freed from all possibility of recall or anticipation, a kind of continuous unfolding of an eternal present? Secondly, we have to ask

[1] This is the solution to the parallel difficulty in the Gestalt theory. For further criticism of Bartlett's conception see Koffka (4), p. 520.

[2] In fact we do not believe this to be a feasible interpretation of Bartlett. In this connexion, compare particularly (1), pp. 213 and 308–11.

[3] It is only fair to state that Prof. Bartlett has modified his views in certain important respects since the publication of *Remembering*. In particular, he now urges that he used the expression "turning round" as a mere descriptive term and had no intention of postulating, explicitly or implicitly, the activity of a special agent. He would now prefer to speak of the "turning-round" process as one of analysis and characterization. In remembering, he argues, we have to deal with an interaction and reorganization of schemata. He still believes that this process gives consciousness "its most prominent character", but would not now argue that it is "where and why consciousness comes in". We may be permitted to express the hope that Prof. Bartlett will see fit to re-state his position formally at an early opportunity.

whether such a form of mental life, supposing it to be conceivable, could reasonably be said to involve *consciousness*, in any useful sense of the term. In answer to the first of these questions we may point out that there is plainly one sense in which it is possible to conceive of such a mode of mental life, namely, as the ideal limit of a series of instances or experiences which embody some explicit reference to something lying beyond themselves in smaller and smaller degrees. Something approaching this ideal limit is occasionally found in advanced cases of senile dementia or in pronounced forms of the so-called 'amnestic syndrome'.[1] But the use of concepts deriving from the consideration of series and their supposed ideal limits is notoriously perilous. On the other hand, there is some precedent for the conception in the distinction drawn by the analytic psychologists between *consciousness* and *self-consciousness*.[2] It may be that there is a parallel between the development of self-consciousness out of consciousness on the one hand, and the discovery of the "turning-round" process on the other. (We have already seen in fact that the "turning-round" process seems to demand, on logical grounds, some *agent*, such as a virtual ego, or 'self', for its performance.)

As to the second question, that of whether a perpetually momentary awareness can be said to involve consciousness in any useful sense, this is evidently one of personal preference in the use of terms. It would appear that Bartlett prefers to restrict the use of the term 'consciousness' to that more developed form of experience in which relatedness can extend beyond the immediately presented circumstances. To sum up this discussion, we may say that it would seem that Bartlett, in saying that this "...is where and why consciousness comes in...", is referring to the emergence of a mode of experience consisting in something more than a string of awarenesses. It entails an apprehended continuity of *experience* and the possibility of explicit *reference to*, and *utilization of*, experiences other than the present.

But there is a further difficulty involved in the relation of consciousness in schemata. As we have pointed out above, Bartlett goes far beyond Head in his application of the concept of the schema to the problem of 'conscious' memory. Head's schemata were defined expressly in the language of physiology. Bartlett's, on the other hand, are said to constitute dynamic organizations of *psychological* material. In so far as they comprise data furnished originally through the medium of direct experience, their initial dependence upon consciousness would seem to be self-evident. If this be so, how are we to say that only in the activity of reconstructive recall does consciousness come into operation? This difficulty may, perhaps, not be of so serious a nature as might at first appear. We must remember, on the one hand, that Bartlett does not claim to elucidate conscious processes as *they are*, but only to suggest how, in the first place, *they arose*. On the other, that he applies the concept of schemata at all levels of organic life and behaviour. Thus we might suppose that in the first, most primitive, "turning-round" processes there were involved no schemata built of organized psychological material of the kind involved in the phenomena of adult memory. This suggestion, of course, involves the further question of whether it is possible for schemata which are *not* built of experiential material to be the subject of the "turning-round" process. And here again the answer to the difficulty may perhaps eventually be found to lie in the distinction between the two senses of *consciousness* discussed above. It may be that schemata which are in some way

[1] An astonishing illustration is given in Störring's monograph (7).

[2] See, for instance, Stout ((8), pp. 14–20 and 581–599).

intermediate between the 'behavioural' and the 'experiential' types must be supposed to exist, the product of awareness of the primitive, "moment-to-moment", type associated with 'matching' and recognition. These schemata would then form the material upon which the first "turning-round" processes operate, thus giving rise to the full development of witting, directed, consciousness.

(3) *Orientation and attitude*

Bartlett does offer some concrete, if rather obscure, suggestions as to the possible development of this aptitude for turning round upon the schemata. Of great importance is his suggestion that the link between schematic determination and constructive schematic reorganization may perhaps be provided by that function which he has christened *attitude*.[1] Again and again in his experimental studies he noted that recall appeared to be determined pre-eminently by the observer's general attitude, or affective reaction, towards the material: "...when a subject is being asked to remember, very often the first thing that emerges is something of the nature of attitude. *The recall is then a construction, made largely on the basis of this attitude, and its general effect is that of a justification of the attitude*" ((1), p. 207. Italics ours). Bartlett goes on boldly to suggest that the 'schema', "together with the immediately preceding incoming impulse, *renders a specific adaptive reaction possible.* It is, therefore, *producing an orientation*[2] *of the organism towards whatever it is directed to at the moment* (italics ours). But that orientation must be dominated by the immediately preceding reaction or experiences. To break away from this the 'schema' must become, not merely something that works the organism, but something with which the organism can work. As I will show later, its constituents may perhaps begin to be reshuffled on a basis of purely physical and physiological determinants. This method is not radical enough. So the organism discovers how to turn round upon its own 'schemata', or, in other words, it becomes conscious. It may be that what then emerges is an *attitude* towards the massed effects of a series of past reactions. Remembering is a constructive justification of this attitude; and, because all that goes to the building of a 'schema' has a chronological, as well as a qualitative, significance, what is remembered has its temporal mark; while the fact that it is operating with a diverse organized mass, and not with single undiversified events or units, gives to remembering its inevitable associative character" ((1), pp. 207–8).

Comment upon this passage is extremely difficult. The empirical fact upon which Bartlett bases his suggestion, namely, that when recall is demanded, the first thing that happens is frequently the arousal of an attitude, is undoubtedly an interesting, and in all probability an important, one. But whether it is capable of interpretation in the sense used by Bartlett is another matter. His suggestion seems to amount to something of the following nature: We have to distinguish two kinds of behaviour or activity on

[1] Bartlett's use of the word 'attitude' is a somewhat peculiar one, whose sense is best determined by study of the whole context. In a general way, it corresponds to the term '*Einstellung*' in the sense of Betz (2).

[2] It would seem from Bartlett's presentation that an *orientation* is to be regarded as a function of the schemata that facilitates subsequent schematic determination in perceptual and overt response, whereas *attitude* is to be envisaged as a function of the organism *in relation to the schemata.* If he is right, and the ability to turn round upon the schemata be correlated with the development of consciousness, then one might distinguish between *orientation* and *attitude* on a purely behavioural basis. An orientation, as a direct function of the schemata, could be expressed in overt behaviour, whereas an attitude, as a conscious process *par excellence*, could only be described in introspective terms. Bartlett himself describes an attitude as "an orientation of the agent towards the image and its less articulated schematic surroundings" ((1), p. 303).

the part of the organism. In the first, the organism, schematically determined, reacts upon the external world. And this overt behaviour demands the mediating function of the *orientation* of the organism towards the object of its reaction. The second kind of organic activity is that in which the organism reacts, not upon the external world but upon its own schemata. In this case the activity consists in reconstructive recall, and, just as reaction towards the external world is mediated by the setting-up of an orientation, so reaction towards the schemata demands in the first place the establishment of an attitude. Up to this point there is little difficulty in following Bartlett's line of thinking. But the next step, and it is evidently a crucial one, lies in the sentence "Remembering is a constructive *justification* of this attitude". The question we have evidently to ask is whether there is any relation between orientation and the behaviour that results from it analogous to this relation of justification subsisting between attitude and remembering? If there were, then it would be possible in some sense to see the "turning-round" process as an instance of organic activity unique only in the peculiarity of its object. We require, then, some closer indication of the meaning of the term orientation, and this is provided by Bartlett in a previous chapter ((1), ch. IX). Here he discusses, as an example of a general orientation, *listening*.[1]

"Auditory perception", writes Bartlett, "is a combination of two functions: *hearing* and *listening*. The former of these is immediately physiological....It is already selective to some extent, but its selectivity is based directly upon stimulus differences of intensity, duration, frequency and the like. The latter function, listening, may have its physiological basis also, but if so we have no way of adequately indicating or locating the apparatus concerned....Listening, like hearing, is selective, but here the characteristics of the stimulus play a secondary part. Selective listening is determined mainly by the qualitative differences of stimuli in relation to predispositions—cognitive, affective and motor—of the listener. This type of selectivity, based directly upon qualitative factors, is dominant over any other type in all the higher mental processes" ((1), p. 190). Writing of recognition, pre-eminently a function mediated by direct schematic determination, Bartlett says: "The distinction between hearing and listening has its parallel in other sensory fields....In all these fields...recognition depends upon the coincident arousal of two different functions: (1) a specific sensory reaction, and (2) an attitude, or orientation..." ((1), p. 191). Later he continues: "Every act of recognizing...carries a significance which goes beyond the specific identification which it involves" ((1), p. 191).

We are now in a better position to try to relate the function of orientation in schematically determined overt reactions with that of attitude in the "turning-round" process. Included among the factors which confer a selective function upon the orientation must be those deriving from the *needs* of the organism. Thus the lion looks for its prey. "Looking-for" is a general orientation, rendered selective in this instance by the fact that lions look for certain particular species, namely those which are mammalian, defenceless, and therefore suitable for food. Thus the needs of the lion are involved in, and expressed by, the orientation of looking for prey. And the behaviour which is mediated by the orientation consists in a satisfaction of the lion's need for food. The need being satisfied, the orientation disappears. We may suggest then, as an interpretation of Bartlett's view of the "turning-round" process, that *the analogy between the orientation*

[1] More specific orientations would be described in such terms as "listening *to* music", or "listening *for* the bell". Bartlett also refers to these specific or "concentrated", orientations as *attitudes* ((1), p. 193).

which mediates overt behaviour, and the attitude which is 'justified' by remembering, consists in the fact that both incorporate an element of demand for satisfaction or completion. It must be added that Bartlett does not himself attempt to arrive at this analogy, nor does he specifically include among the selective factors in orientation those which have reference to the wants or needs of the organism. The interpretation given above is offered in the hope that its consideration may enable the reader to perceive the more clearly for himself the implications of Bartlett's statement.

(4) *'Dominant detail' and the function of images*

Bartlett considers that there is an "obvious objection" to his theory of the relation of attitude to 'schema', and this we must now consider in some detail, for it opens the way to his theory of images. He points out that "so far as the 'schema' is directly responsible for the attitude, it looks as if the latter must itself be predominantly determined by the last incoming incident of the mass of past reactions" ((1), p. 208). "But remembering", he adds, "often pretends to be of an incident remote in time, and that incident is not, as in the rote recapitulation method, now reconstructed by going through a whole chronological series in order. If 'schemata' are to be reconstructed after the fashion that seems to be demanded by the phenomena of recall, somehow we have to find a way of individualising some of the characteristics of the total functioning mass of the moment" ((1), p. 208). Now sometimes under experimental conditions, and frequently in everyday life, specific items of detail associated with some more comprehensive experience can be immediately recalled if the need to remember arise: "...an attitude is set up; in the form of sensory images, or, just as often, of isolated words, some part of the event which has to be remembered recurs, and the event is then reconstructed on the basis of the relation of this specific bit of material to the general mass of relevant past experience or reactions, the latter functioning, after the manner of the 'schema', as an active organized setting" ((1), p. 209). This appearance in consciousness of initially isolated detail Bartlett believes to be associated with the phenomenon which he has previously called *dominance*. "In the experiments on perceiving, or imaging, and on all the various modes of recall, while there was a sense in which subjects could accurately be said to have reacted to whatever material was presented 'as a whole', yet in that whole some special features were invariably dominant. In many cases, when that material had to be dealt with at a distance, as in remembering, the dominant features were the first to appear, either in image form, or descriptively through the use of language" ((1), p. 209).

How does this dominance on the part of individual items come about? In the first place, Bartlett refers to what may be called stimulus conditions. "If we have stimuli *a*, *b*, *c*, *d*, of which *c* is more intense, or lasts longer, or is more voluminous than the rest, it may be that these physical characters tend to break up the strict chronological construction of the 'schema', and give to *c* a more dominant function than *d* acquires"[1] ((1), p. 210). "But it is obvious", Bartlett goes on, "that these physical factors have comparatively little weight in the life of the higher animals and of man" (ibid.). "The possibility of being directly determined by really remote stimuli seems to be coincident

[1] We might perhaps include under this class of stimulus conditions the configurational determinants of dominance investigated so extensively by Gestalt psychologists. Thus 'figural' dominance, perhaps insufficiently emphasized by Bartlett, probably represents yet another factor whose basis is "laid down at a preconscious stage of development" (cf. Bartlett (1), pp. 31–2, and 210; Koffka (4), ch. IV).

with the development of specialized and widely ranging interests." This possibility, moreover, must itself demand "a reshuffling and reorganization of material which naturally falls into diverse organized patterns. Thus things seen, heard, touched, tasted, events connected with the intake of food, with escape from danger, are all taken out of their natural special sense, appetite and instinctive 'schemata', and organized together by a persistent interest in a vocation, or in a sport, or in a particular department of human knowledge" ((1), p. 211).

Now the development of persistent interests involves more than a mere reshuffling or reorganization of schemata; it also involves the *individuation of specific items in a given schema.* Certain features of a presented whole may, on account of strong individual interests, become 'dominant', and these striking features may then be "carried along in an individualized fashion and, in the form of sensorial images, or of language . . . directly influence reactions, long after their original stimulus occurred" ((1), p. 211). From the biological point of view, one of the principal functions of images is thus "*to pick items out of 'schemata', and to rid the organism of over-determination by the last preceding members of a given series*" ((1), p. 209. Italics ours). As in the case of reconstructive remembering, Bartlett believes the appearance and operation of the 'interest-determined' image to be dependent upon the emergence of consciousness.

It would seem to be plain at least that Bartlett is not guilty of adopting the postulate of maintained independence and specificity of traces, nor the view that such traces can be revived in their original form as images. Images for him have come into being through the individuation of specific items in a given schema. On the other hand it would seem that images acquire some degree of independence and autonomous being, since their revival can occur without the necessity for a full-dress constructive act of recall, *and in fact it is revival which alone can provide the concrete starting point for such reconstruction.* The question of *how* images are thus preserved ready for revival is neither asked nor answered by Bartlett, apart from the statement that they are 'carried along' by interests. It is difficult to avoid the feeling that this burden, which in many organisms is a very weighty one, must be shared by some other and less imponderable entity.

(5) *Temperament and personality*

The last theoretical problem to be considered by Bartlett is that of the *development* of schemata, a topic which leads on to his views of their relation to temperament and personality in general. As we have already pointed out (vide supra, p. 116), Bartlett specifies in *Remembering* two principal conditions of schematic organization: the first, integration along the lines of common sensory modality; the second, integration through continuity of interest. In the penultimate section of chapter x, he not only amplifies these views, but also indicates their possible bearing upon the psychology of temperament and character. In the first place, he urges, there is bound to be considerable overlap between different schemata. "Material that is touched is generally also seen, and it may be heard, smelt, tasted simultaneously. So the same material goes, from the point of view of experience, or of reaction, into different 'schemata'. Again, what is now explored cutaneously may be studied by vision, or by hearing on another occasion, once more with the same result, so far as the organization of 'schemata' is concerned" ((1), p. 212). In the second place, on a somewhat higher level, perhaps, it is reasonable to assume that "appetites, or instinctive tendencies, set the lines of organization" (ibid.). But "different appetites and

different instinctive tendencies are not isolated. Their ranges of operation overlap continually.... When interests and ideals develop, the same characteristic is yet more markedly present.... Moreover, because there is this notable overlap of material dealt with by different 'schemata', the latter themselves are normally interconnected, organized together and display, just as do the appetites, instinctive tendencies, interests and ideals which build them up, an order of predominance among themselves" ((1), p. 212).

Now the mode of integration of tendencies, or their order of relative predominance, is, in so far as it is innate, "precisely what the psychologist means by 'temperament'"; whereas, "in so far as it is developed during the course of life..., it is what he means by 'character'. Thus what we remember, belonging more particularly to some special active pattern, is always normally checked by the reconstructed or the striking material of other active settings. It is, accordingly, apt to take on a peculiarity of some kind which, in any given case, expresses the temperament, or the character, of the person who effects the recall. This may be why, in almost all psychological descriptions of memory processes, memory is said to have a characteristically *personal* flavour. If this view is correct, however, memory is personal, not because of some intangible and hypothetical persisting 'self',... but because the mechanism of adult human memory demands an organization of 'schemata' depending upon an interplay of appetites, instincts, interests and ideals peculiar to any given subject" ((1), p. 213).

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FORMULAE FOR WORK CURVES

By D. F. WARD

I. *Introduction* (p. 130). II. *Hyperbolic formula* (pp. 130–131). III. *Logarithmic formulae* (pp. 131–137). IV. *Summary* (p. 137). *References* (p. 137).

I. Introduction

The formulae here presented were considered during a study of work curves of computation (1) as described in a previous paper (2), they were approximately hyperbolic in outline, and were considerably flattened when plotted on two-way log paper. The grand total curves approximated to straight lines for their first sections of 400 sec. when so plotted. Regression lines of 'best fit' were evaluated for each curve, the slope of each of these lines giving the fatigue decrement of each subject.

The rectangular hyperbola can be expressed by the equation

$$xy=k \text{ (a constant)},$$

and taking logarithms,

$$\log x+\log y=k' \text{ (a constant)}, \quad \text{i.e.} \quad \log y=-\log x+k'.$$

Thus if work curves were pure rectangular hyperbolae, when plotted on two-log paper they would all be parallel straight lines having a negative gradient of unity.

However, no fatigue decrement or gradient of our curves approached unity, and there was considerable divergence in their values. Thus the need was felt for a formula to fit these empirical curves, giving allowance for difference in slope when plotted on two-way log paper.

II. Hyperbolic formula

The formula $x^m y=k$ is suggested, where m is a constant for a particular individual, although varying from curve to curve.

Thus taking logarithms, we have

$$m \log x+\log y=k' \text{ (a constant)},$$

i.e.

$$\log y=-m \log x+k'. \tag{1}$$

Thus when $\log y$ is plotted against $\log x$ we shall again have a straight line, but the gradient of the line will be represented by $-m$. Regarding the y axis as units of work output, and the x axis as time in seconds, the m will approximate to our fatigue decrement. It will not be exactly so, because our curves do not give perfect straight lines when plotted on two-way log paper.

However, as the gradients of our curves were found to be less than unity, then our coefficient m will be a fraction.

Thus an improvement in the formula would be $xy^m=k$, where m is >1, and still constant for a particular subject. Then taking logarithms we have

$$\log x+m\log y=k' \text{ (a constant)},$$

i.e.
$$\log y=-\frac{1}{m}\log x+\frac{k'}{m}. \qquad (2)$$

Here the gradient of the curve is represented by $-1/m$.

Our measure of decrement in the research was the line of 'best fit' from the second point of the curve to the end. Using Yule's notation for regression lines (3), the line suitable for the purpose was

$$y=b_2x, \quad \text{where} \quad b_2=r\frac{\sigma_y}{\sigma_x}.$$

It will thus be seen that in formula (2) the reciprocal of the coefficient m is approximately equal to b_2. Further, all subjects who decrease in output for the length of the curve in the same proportion, will have the same decrement or coefficient $(1/m)$, i.e. a subject who decreases from 40 to 30 units of output will have the same coefficient as a subject who decreases from 30 to $22\frac{1}{2}$, or from 20 to 15 units of output.

III. Logarithmic formulae

Philpott (4) has suggested two logarithmic formulae to cover two extreme types of curve.

"Type A is that of a single homogeneous task within which no threads are engendered save at the nominal moment of starting work. It will presumably be of marked hyperbolic shape, with geometric periods, and increasing amplitudes. Apparent fatigue will be maximal. Type B is of a succession of..... short hyperbolas joined from end to end. To the extent that all the threads change with the commencement of each short operation, the said resulting curve will be horizontal with reference to the base-line. While being a succession of hyperbolas, it will appear to be of 'saw-toothed' outline, the said teeth having minor geometric waves on their slopes, these of course being the true attention waves, although to the eye the 'saw-teeth' may be the essential fluctuations....

The curves obtained in practice will probably lie in intermediate positions....The formula given for type A is

$$y=K\log\frac{t+a}{t-a},$$

where y is the amount of work done in an interval of $2a$ sec., the said interval being centred at a time t sec. from the commencement of work, K being constant for the individual....

The formula so given is for a single thread, or a bundle of threads having a common point of origin. In practice we are hardly likely to meet with a pure example of the kind, it being so completely of type A. As soon as a curve takes on any of the characteristics of type B, elements proportional to ordinary time will enter. Whence a more probable formula for ordinary cases is

$$y=K\log\frac{t+a}{t-a}+C,$$

where C is a constant amount per $2a$ sec. Moreover, the more a curve tends to be of type B, the greater C becomes, relatively speaking, until in the limiting case we get a curve purely of that type, with formula $y=C$.

Curves from performances such as computation are dominantly geometric, with marked decrement, and increasing amplitudes, so that to the eye they are markedly of type A. But there may nevertheless be quite a large C element present, despite apparent absence of a saw-toothed outline. The curve may consist of a main bundle of threads running continuously and associated maybe with the 'set' that keeps the mind on the task in hand. If, following the usual practice, subjects make a mark or start a fresh line at given time signals, new threads may be engendered. The tiny hyperbolas so set up may be

confined within the intervals concerned, thus not appearing in the curve, save as a constant amount of output per interval. Even the single items of work (single acts of computation or the like) may see the setting up of threads, still more being added to the C element" ((4), pp. 218–20).

The first logarithmic formula will always have a negative gradient of unity when plotted on two-way log paper, as shown in Fig. 1, when t is plotted for 100, 200, ..., 800 sec. and $2a$ is 5 sec. and K given values as shown. Thus the alteration of K is shown to be independent of the slope of the curve.

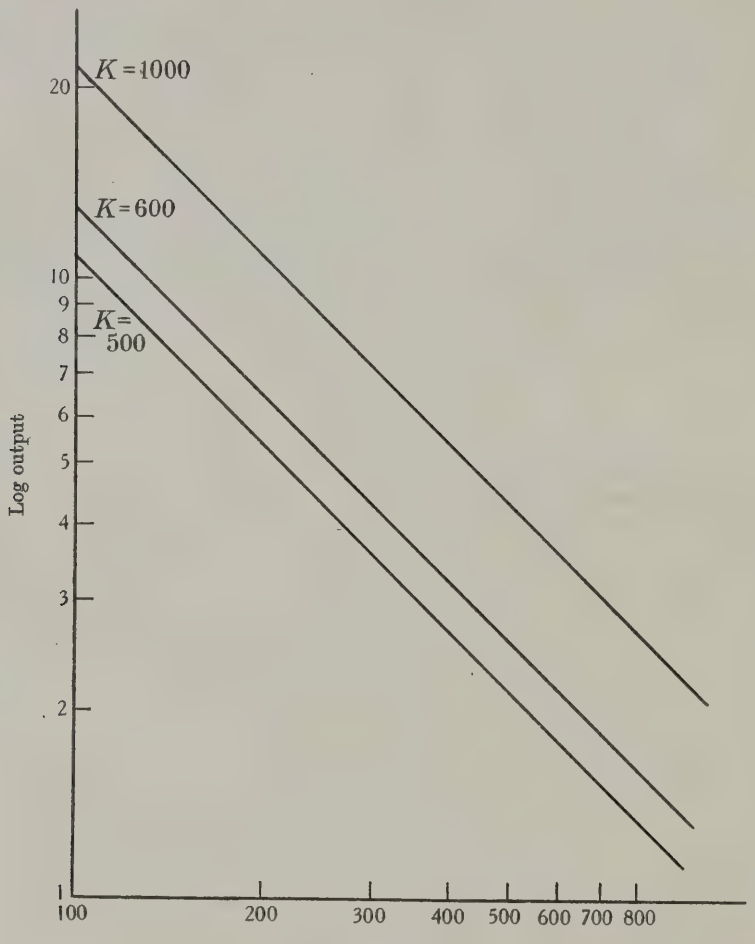

Fig. 1.

If, however, we use the second formula introducing C, we find the gradient to vary, even if we keep K constant. In Fig. 2 K is kept constant at 500, and C is given values 3, 5 and 10. The figure shows that the increasing of C reduces the gradient of the curve, and thus according to the formula all curves having low gradients will have a large C content. It will be observed that the curves in Fig. 2 are not perfect straight lines, the points tending to lie on a line from 400 sec. onwards.

The decrement is also found to vary if C is kept constant, and K is made a variable, as shown in Fig. 3. Here we find that the decrement decreases when K decreases. Thus it

is seen that when the second formula is employed, both coefficients have a bearing on the slope of the curve, C decreasing the slope and K increasing it.

The empirical curves obtained from the research were found to be more like the curves shown in Figs. 2 and 3. No curve had such a steep gradient as that of the curve shown in Fig. 1. Hence we can presume that there is some C content present.

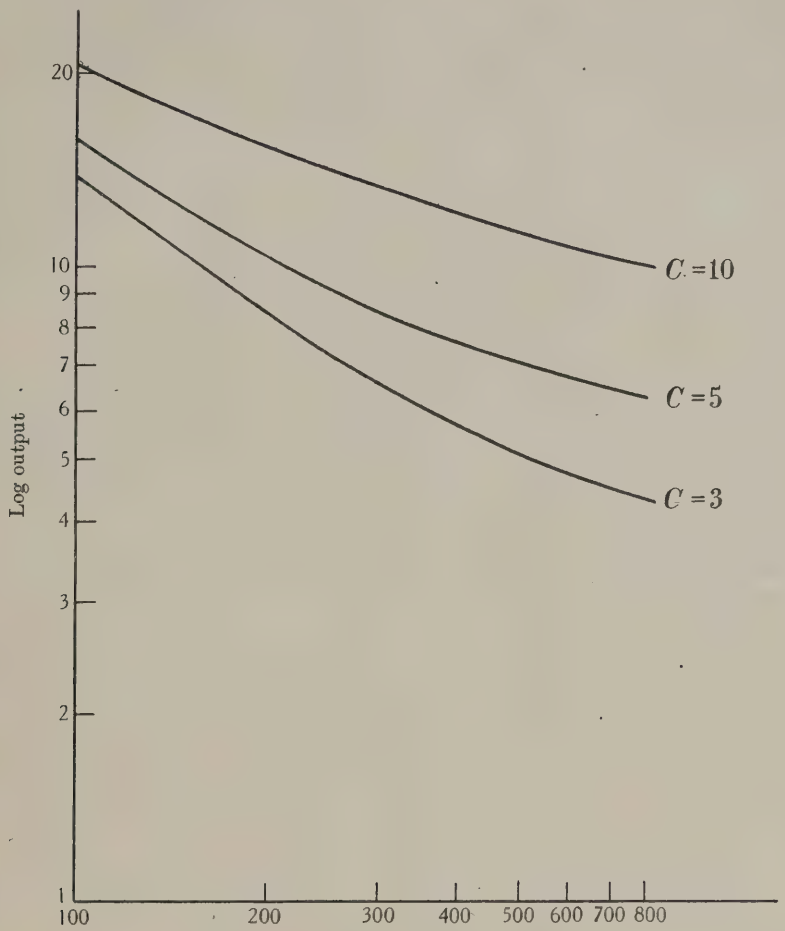

Fig. 2.

It is now possible to estimate approximately from a subject's work curve his C and K coefficients. First, the line of 'best fit' as calculated from the regression line should be drawn to meet the vertical or output axis. A 45° set square should be moved along the vertical axis to coincide with the lines of Fig. 1. Inspection should be made by moving the set square up or down the vertical axis so that the arithmetical difference on the vertical axis (from the line of 'best fit' to the 45° line given by the side of the set square) is approximately equal to the arithmetical difference at say 800 sec.

In Fig. 4, AB represents the line of 'best fit' and CD is a line inclined at 45° to the horizontal. CD is a line as given by the first logarithmic formula. For the correct reading

of C and K, the arithmetic difference in units of output, A–C must be the same as B–D. Thus a subject's C coefficient is the above difference and his K coefficient can be found by reference to Table 1.

Thus at 800 sec. K will be $x/2{\cdot}71 \times 1000$, where x is the output ordinate, less the subject's C coefficient. This value can be checked by evaluation at other time values.

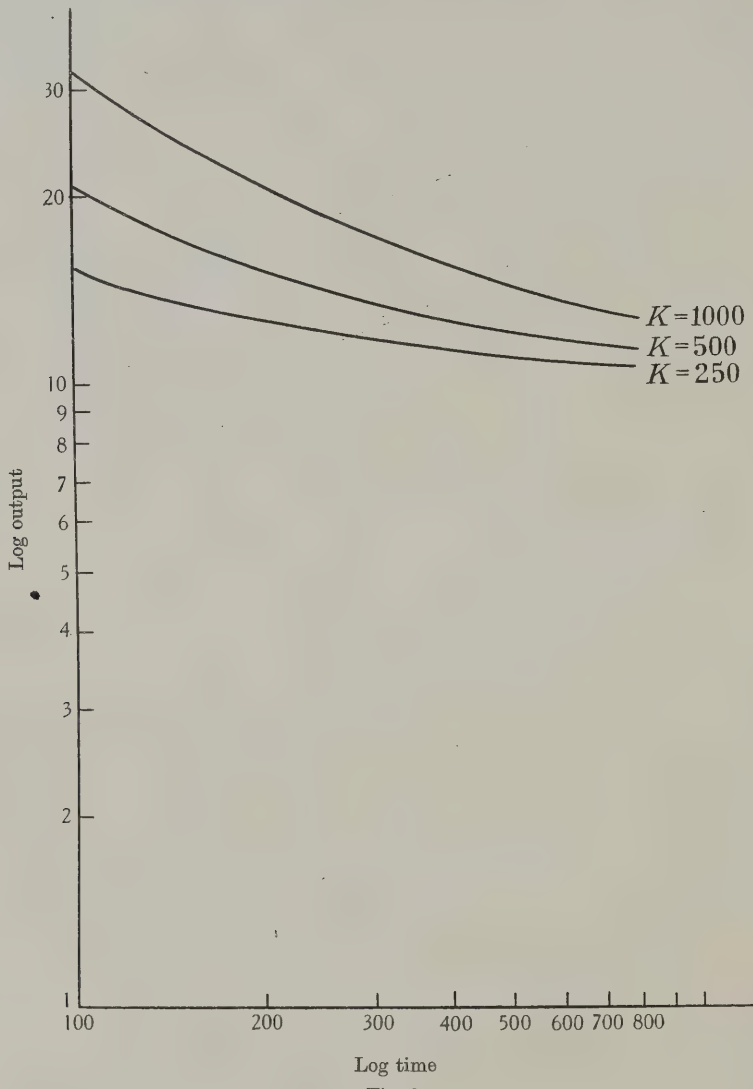

Fig. 3.

We have now given two aspects of the work curve. In the first case we measured a subject's decrement by his coefficient $(1/m)$, and in the second case it is seen to be dependent on C and K. We should therefore expect $(1/m)$ to correlate positively with K and negatively with C.

In the logarithmic formulae discussed above, the decrement has been shown to vary through the two coefficients, and the apparent fatigue has been reduced through the new

threads set up. However, in the hyperbolic formula, we have used a coefficient of fatigue $(1/m)$, and in the logarithmic formulae we have shown the apparent fatigue to be diminished

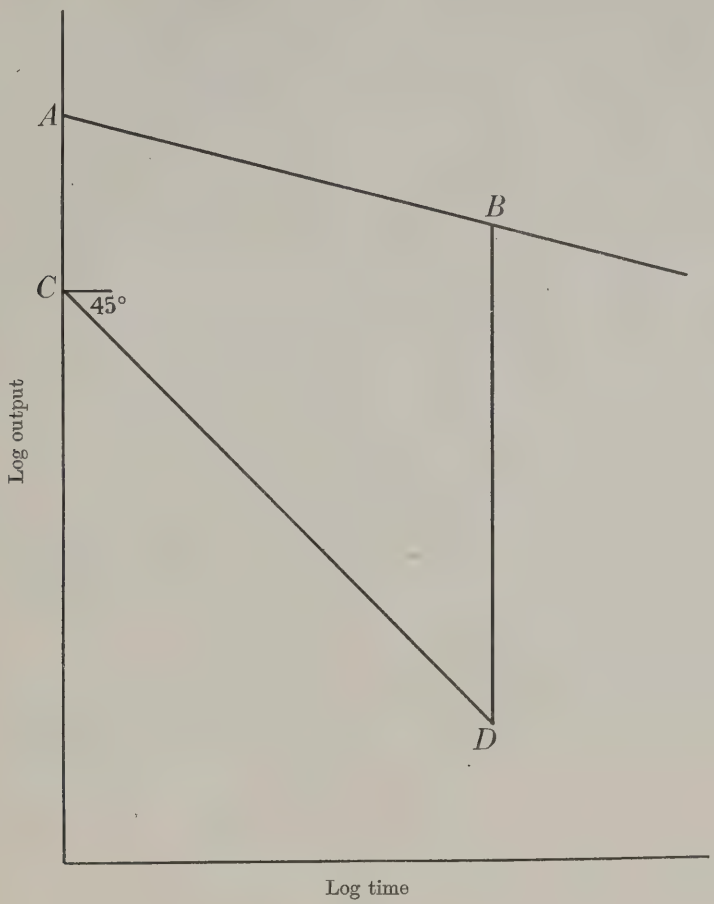

Fig. 4.

Table 1

Time (t) in sec.	Log $\frac{t+a}{t-a}$ ($a=2\frac{1}{2}$)	Y (when $K=1000, C=0$)
100	0·02168	21·68
200	0·01083	10·83
300	0·00723	7·23
400	0·00543	5·43
500	0·00433	4·33
600	0·00362	3·62
700	0·00311	3·11
800	0·00271	2·71

by C. It, however, seems reasonable that there should be a fatigue coefficient in the logarithmic formulae, and that a subject's decrement should vary through this. The following formula is suggested, where m' is a fatigue coefficient and is >1:

$$yK \log \frac{m'(t+a)}{(t-a)} + C.$$

We will assume for a first consideration of this formula that $C=0$. Giving m' values between 1 and 2, we get the curves as shown in Fig. 5, K being kept constant at 100.

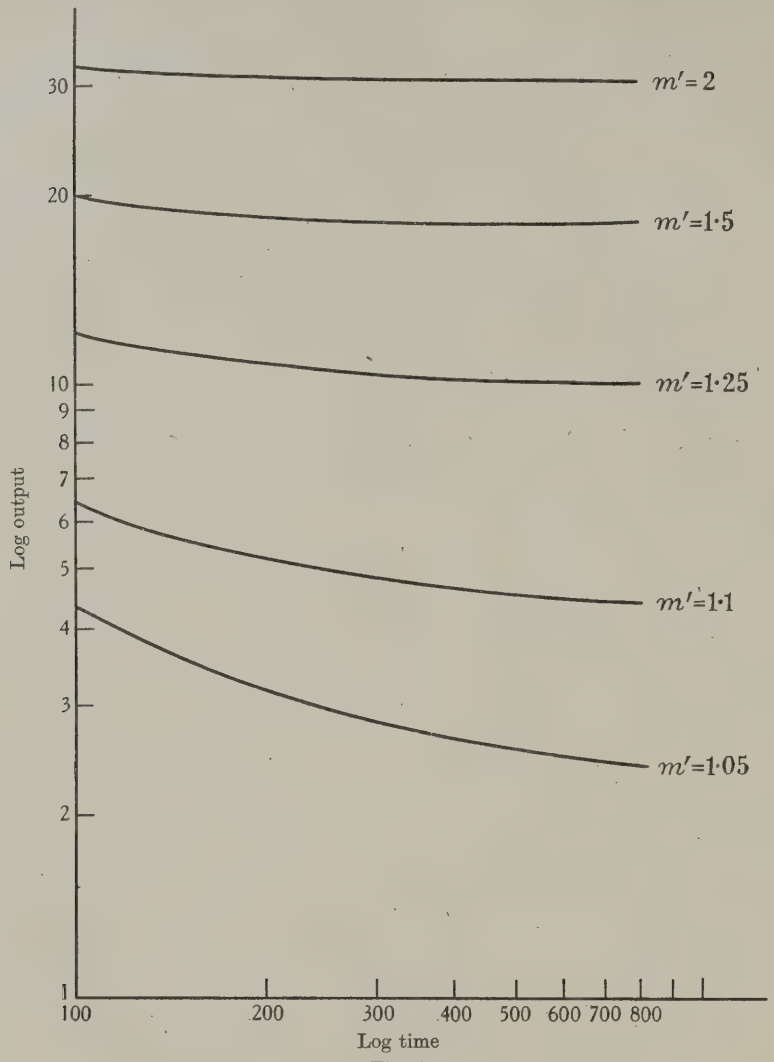

Fig. 5.

Table 2

Time (t) in sec.	$\binom{m'=1\cdot05}{y}$	$\binom{m'=1\cdot1}{y}$	$\binom{m'=1\cdot25}{y}$	$\binom{m'=1\cdot5}{y}$	$\binom{m'=2}{y}$
100	4·29	6·31	11·86	19·78	32·28
200	3·20	5·22	10·77	18·69	31·19
300	2·84	4·86	10·41	18·33	30·82
400	2·66	4·68	10·23	18·15	30·65
500	2·55	4·58	10·12	18·04	30·53
600	2·48	4·50	10·05	17·97	30·46
700	2·43	4·45	10·00	17·92	30·41
800	2·39	4·41	9·96	17·88	30·37

Here we see that the higher in value m' becomes, the less the slope of the curve. When $C=0$, K does not affect the slope of the curve. Table 2 shows the values of y as m' varies.

It is observed from the table, that when m' approaches 2, the curve approaches the limiting case, i.e. $y = C$, or, in other words, a line parallel to the time axis. It is obvious that the majority of subjects will have m' coefficients of the order 1·05–1·25. It will not be possible to measure the m' coefficient by reference to a 45° line, but only by comparison with the values shown in Table 2. Further, we should expect $(1/m)$ to correlate negatively with m'.

If now a C coefficient is introduced, the decrement is still further decreased, but the decrease is not so acute as in Philpott's formula.

IV. Summary

Certain aspects of the formulae for work curves have been considered, and formulae have been put forward which consider the decrement of the curve, and may also give a fatigue coefficient. The hyperbolic formula is the easiest to understand; it gives a straightforward measure of decrement in itself. The logarithmic formulae are more complex, but take into account the element of new threads of output being engendered. Here the decrement is dependent on two coefficients, and a method is outlined to find them. The new logarithmic formula put forward makes an attempt to give a decrement measure in terms of a single measure, m', but the other coefficients may still affect the curve. Further research may show how to detect the new threads engendered.

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PUBLICATIONS RECENTLY RECEIVED

The Impulse to Dominate. By D. W. Harding. London: Geo. Allen and Unwin, Ltd. 1941. Pp. 256. 7*s.* 6*d.* net.

It is to be hoped that a very large number of people will not be satisfied simply to read reviews of this book, but will purchase it for themselves, or seek it from their libraries, will read it without haste and will think carefully about the many ideas which it sets forth. The book is topical but dispassionate, dispassionate but humane, humane but not condescending. It is a pleasure to read, for it uses words in a most comely manner, and combines, in fact, considerable charm of style with far more penetrative and persistent psychological thinking than are commonly to be found.

Contemporary society, it is strongly maintained, is organized mainly on a basis of dominance on the part of some people and some groups and submissiveness on the part of others. It appears also to be considered that since on the whole dominance is more highly thought of than submissiveness, it is likely that more groups must seek it over a wider and wider social range and with less intermission as time goes on. Whether this type of social group relationship is really, as McDougall seemed to imply, radically inherent in human nature, or whether it is to be regarded as wholly a cultural product does not become entirely plain. One gets the impression that Mr Harding would rather like the latter to be true, but is too honest to maintain that the case for it is proved, and too psychologically clear-minded to be entirely carried away by the arguments. He is extremely attracted by W. J. Perry's view of the fundamental peacefulness of humanity, though there seems no more reason why war, springing from the impulse to dominate, should be regarded as mere cultural accretion, than why peacefulness, springing from some other sort of impulse, should not be similarly regarded. It is true that in hypothetical history peacefulness comes first, but that is not a psychologically adequate reason for regarding it as something entirely different.

However this may be, the dominance-submissiveness relationship is a very powerful one, entering into and moulding the form of very nearly every kind of social activity. Particularly it is apt to control the contacts of groups. Hence war is not something strange, and it cannot either be truly regarded merely as a disease or as a reversion. It is only an extreme form of a normal social relationship.

With this as his basis, Mr Harding is able to discuss with great clarity and force many of the changes in social life which commonly develop during war, and to show that they are mostly changes of emphasis and not novelties. War has its own socially imposed restrictions. It requires the acquiescence of populations and much machinery for securing such acquiescence as the result. Once the machinery is set up, whether as a consciously formulated scheme for propaganda, or in some very much less thought-out manner, acquiescence will, in a large number of cases, become a kind of easy social habit. Thus the extremes of domination may be themselves the outcome of the institutions and social dodges which the impulse to dominate has established, and war can be considered as a "cultural product". Having arrived at this point, Mr Harding, being himself by no means immune from the current cultural influences at work in psychology, is impelled to consider the psycho-analytic view of war. This is regarded as attractive, but much too simple. It leads the author to discuss some of the compensations of war, the apparent release to a simpler kind of society, the seeming increase of social unity, even the turns taken by expressions and allegations of cruelty, and by a growth of sexual interests. The general position adopted is that while, in the explanation of all these and some other changes, psycho-analytic theories have some force, they can never be regarded as covering all the facts. Motives, incentives and behaviour on a fully conscious level all have their important parts to play.

There follows an extremely interesting study of "protest and collapse". As war—or any other state of widespread intense effort after dominance—proceeds, a lot of its minute particulars become more and more impressive. These, piling up, tend to precipitate a collapse which appears generally to be far more sudden than in fact it is. Once again much of the strain of minute particular events remains unformulated and unconscious, but a lot of it does not.

Most readers may well find the last three chapters the most attractive parts of the whole book. Here Mr Harding discusses Political Barriers against War, The Notion of Peace, and Relinquishing Domination, and enquires into the possibility of a society in which war is no longer a direct expression of existing cultural characters. It is easy enough to see where the author's sympathies lie, but the argument is con-

ducted on a proper psychological level; that is to say, Mr Harding is rigorously considering the conditions which appear likely to make peace possible and lasting, and not whether those conditions *ought* to be sought. Most people, he points out, think of how to "prevent" war, but it would be psychologically more to the point to consider how war may be "relinquished". Generally speaking the political reformer thinks in terms of some supra-national state, whose power is equal to its benevolence. But this is to try to establish peace in a society constructed essentially on the dominance model, an effort which seems to carry some psychological contradiction within it. Mr Harding turns for enlightenment to Perry, the anthropologist, to Suttie the psycho-therapist and to H. H. Anderson the experimental psychologist.

Perry is considered to have shown that man can live at peace in society because he has done so in the past. But even if Perry's facts are accepted at their face value, it is impossible to escape the conclusion that our author might have considered a bit more carefully than he has done whether a good many of the other characters of the societies held up as examples by Perry are at all consistent with that "integrated" group life which he himself considers the best guarantee of peace in the modern world.

Suttie claims to have shown that a whole mass of trouble arises from dependent emotional relationships, especially between mother and child, persisting in the modern family. He thinks that if these can be superseded by a process which leaves the tender emotions still as strong as ever, but maintains complete individual integrity, the changed family pattern will have enormous repercussions on the whole social order. Suttie considers that this can be done by a correct process of "psychological weaning", and Mr Harding seems to agree, but without minimizing any of the difficulties. To Mr Harding the process requires nutritional changes, economic changes, sociological changes and profound individual changes which are unlikely to be secured without widespread therapeutic treatment.

H. H. Anderson, working, it should be noted, with rather small and protected communities of school-children, claimed that when differences arise, they can be effectively and finally resolved only by a process of "social integration". This means that "two people who find themselves differing take the opportunity to reconsider completely their original aim or opinion". No powerful third person comes in to help them out of their trouble. In the result they change their behaviour radically without in any way relinquishing their individuality. Mr Harding suggests that what is already possible in the small, protected, perhaps relatively isolated community, may extend to the whole world of social groups, and must do so if peace is to become secure. War cannot be avoided by the establishing of any source of overwhelming dominance, as most people still believe, but only by a complete change of social pattern from which the persistent dominance-submissiveness theme has finally disappeared.

No review can do sufficient justice to the thoughtfulness, the psychological insight, the persuasiveness and the charm with which the thesis of this book is developed. Most of its points are arguable, many of them are inevitably insufficiently developed in a book of the size of this one, but it is a book that any psychologist might legitimately feel glad to have written. F. C. B.

Change No. 3. *An Enquiry into British War Production.* Part I. *People in Production.* A Report prepared by Mass-Observation. London: The Advertising Service Guild. 1942. Pp. x+410. 10*s.* net.

This report on British War Production, prepared by Mass-Observation, provides the clearest analysis yet produced of the immediate psychological basis of labour difficulties at the present day, and their inter-relationship with civilian morale in this country. It is not content merely to present a series of factual data as to the labour problems connected with war production, valuable though these may be; but through a masterly psychological interpretation of these facts and their interrelationship, enables the reader to gain a real understanding of the basis and ramifications of the problems. Thus it constitutes a valuable contribution towards the social and industrial psychology of the present day, one which was much needed because so conspicuously lacking.

It would perhaps be unwise to place too great a reliance upon the statistical details given in the report. Rather disingenuously, only percentages are quoted in the statistical tables and not the actual numbers of people interviewed and questioned. This number was apparently rather small, though supplementary information was obtained from "Mass-Observation's voluntary observers". But in spite of these deficiencies (and it is a pity that Mr Harrisson could not remedy them, although they were necessitated in part by the speed at which the report was prepared) the conclusions drawn have sufficient mutual consistency and psychological soundness as to be, in the main, most convincing.

The crux of the labour problem in war production seems to lie in the changing and conflicting motives of those engaged in war industry. There is little deliberate ill-will or disaffection among management or employees, but neither have been able to adapt themselves adequately to the war situation and the alteration which it necessitates in the traditional incentives of industry. The profit incentive has been decreased by E.P.T. and the wage incentive by lack of opportunity for spending—though inequalities in wages still continue to cause jealousy and discontent. The power of the 'sack' has been removed by the Essential Work Order and by the labour shortage, and hence the incentive provided by the employee's fear of it. There remain the employee's fear of future insecurity and hence his concern over his post-war status; and the employer's desire to return to the status quo. These incentives do *not* make for more efficient production. The patriotic motive is obscured for the employee by his feeling that he is still working for the 'boss' and his profits and not, like the soldier, serving his country; and for the employer, by his conviction that his best efforts are nullified by official obstructions and the slackness of his employees. Neither party is fully aware of the nature of his motives. Each is, more often than not, convinced of the importance of his work to the war effort, and thus is liable to project the cause of any deficiencies in its performance on to someone else—usually someone higher up the scale of management, and thus ultimately on to the Government. A lack of urgency in the performance of his own work is also enhanced by the foolish optimism—the assurance of victory—in official pronouncements in the press.

The fundamental cause of these difficulties is the long history of industrial discontent in this country, and the strained relationship—or more properly the lack of any real social relationship—between employer and employee. It is very difficult to remedy this state of affairs directly, particularly in war time when so many of the younger and more intelligent men have been removed from industry. Yet there is little doubt that what is needed is the creation of something in the nature of Mr Denis Harding's 'social integration' between the two sides. The institution of Works' Councils is helpful in this respect when they are made to function in a co-operative spirit—as often they are not. Again, the motive of patriotic service may be enhanced by showing the workers directly how they are contributing to the war effort. Visits to factories by distinguished pilots, and other members of the Services, are of proven value in this respect, and are all too few. This report also suggests the formation, on a national scale, of general plans for organizing the human relationship side of industry, as well as the purely economic and mechanical sides which appear to be the only issues of which the Production ministries are aware.

On the side of what is usually called 'Welfare' there are, however, many conditions which might be remedied with relative ease and with much relief to the frictions and discontents of labour. The introduction of 'Welfare Superintendents' or 'Labour Managers' should be more widespread than heretofore, and the scope of their functions enlarged. Less overtime (and more time off for shopping), better transport, more canteen facilities and day nurseries—these are some of the things which would improve the conditions and lower the absenteeism among the women workers who now play so important a part in war industry. And it is worth noting that women are much more concerned with such conditions, and less with status and industrial relations, than are skilled male workers. Thus it should be relatively easier to tackle their difficulties.

The actual amount of restriction in production resulting from these troubles is probably exaggerated—the figures quoted in this report appear to show that individuals not employed in war industry are much more prone to this exaggeration than are those who are actually employed in it and know something about it. But the deleterious effect upon civilian morale in general of the discontent with the rate of the production is very great. In the last war we 'blamed it on' German spies (often in fact harmless aliens). In this war, we make a stalking horse of the industrial worker, the civil servant who regulates the conditions of industry, and the Government which creates the regulations. Unless this condition of affairs can be radically improved, such criticism may lead to a dangerous slump in morale. This report, by analysing the basis of the trouble, shows the way to possible methods of remedying it.

Testing Results in the Infant School. By D. E. M. Gardner. London: Methuen and Co., Ltd. 1942. Pp. ix + 158. 6*s.* 6*d.* net.

The author of this book has conducted a carefully controlled piece of testing in order to compare the capabilities of Infant school children educated in the formal manner with those educated in 'free activity' schools. Four 'experimental' ('free activity') schools were paired with 'control' schools of a corresponding

social class, in which teaching was of the formal type. The actual children tested were also paired for age and intelligence (measured by the Pinter-Cunningham test). A series of tests were then given the children at the age of six plus, and some of these were repeated at seven plus. Unfortunately this latter part of the research was greatly interfered with by evacuation.

As might be expected, the children in the 'experimental' schools did better in imaginative and constructive tasks and at spontaneous expression. But they also did better in tasks involving concentration both on self-chosen activities and on one selected for them which was not intrinsically interesting; and at tasks needing self-confidence. They showed better and more co-operative social behaviour towards adults and towards each other. On the whole they did at least as well as the 'control' children in formal educational subjects—reading, writing, arithmetic and physical training exercises; and in tasks involving neatness. Thus it appears that 'free activity' does not have a deleterious effect either on learning specific school subjects, or on power of concentration and on social behaviour. It seems that the general superiority of these children in liveliness and keenness affects all the work they do. Miss Gardner has done a valuable piece of work in demonstrating this result so clearly and conclusively.

Only one control was missing—that of the capabilities of the teachers. Miss Gardner states that none of the teaching in the schools studied was bad. But it does seem probable that the more lively and enthusiastic teachers would be found in the 'free activity' schools—possibly a further recommendation for the latter. It would, however, be interesting to have an assessment of teachers' capabilities to compare with that of the children's.

They Went to College. By C. Robert Page. University of Minnesota (London: Humphrey Milford). 1941. Pp. xiv+148. 15*s*. 6*d*. net.

Nine hundred and fifty-one former students of the University of Minnesota, now between the ages of 25 and 34, answered a 52-page questionnaire about their ways of life, their jobs, their incomes, their interests, their degree of satisfaction with their lot in life and a very large number of other things. Two hundred of these nine hundred odd submitted to an interview about their replies and matters connected therewith. This book clearly summarises the results of the inquiry. Much of the material may be of considerable social interest, though it is very difficult to form a true idea of the degree of seriousness which should be attached to the survey. It seems very hard to believe that any people would tackle a 52-page set of questions of the kind set out unless they have not very much in general to do and certain other common characteristics. The general picture is of a rather conventional group in fairly easy economic circumstances, on the whole more prone to satisfactions than to dissatisfactions. Their college education appears to have done little for them in a vocational sense, and to have had exceedingly little permanent influence in any social or political direction. Perhaps they are a more selected group, however, than the author is willing to admit.

The Clinical Application of the Rorschach Test. By Ruth Bochner and Florence Halpern, with an Introduction by K. M. Bowman. New York: Grune and Stratton. 1942. Pp. x+216. $3.00.

This is a book of instructions on how to use and interpret the Rorschach Test. It may be recommended without hesitation to any student of psychology or medical practitioner who wishes to learn how to apply the test, or to any trained psychologist who desires to have data on which to form a reasonable opinion of the value and limitations of the Rorschach procedure. So far as we know there is no other book which covers the field as adequately and as fairly in so short a space. While the authors do not in any way disguise their belief in the test as a means of clinical examination, they exaggerate neither the strong nor the weak points of its use. They give very clear instructions in the matter of how to administer the test cards, they list and explain all the main categories of interpretation and the symbols by which these are expressed, they state the interrelations of the cards and why they have been placed in the order in which they are given, and they give a number of illustrative interpretations drawn from actual experiment. These interpretations cover records of normal people, of children, of mental defectives, of neurotics, of schizophrenic patients, and of people suffering from certain organic disorders. There is a very short and admittedly inadequate chapter dealing with recent developments which, however, ought not to be held up against the authors as a defect in their presentation, since they are perfectly clearly concerned with the procedure only as a basis for individual character diagnosis.

What impression is the whole likely to make upon the interested, but undecided reader? It seems likely that he will be attracted and interested, and that however cautious he may wish to be he will have to admit that the test may have very great and expanding value for many purposes. He will also see that the technique may be very time-consuming, and that the possible interpretations are so various and the boundaries between one category and another so soft that it may become very difficult to strike a balance between individual judgment and conventional, perhaps esoteric, categorization. But whether he will regard this as an advantage or a disadvantage is likely to depend very much on his general psychological point of view and his personal predilections. However, any fair-minded reader is likely to agree that this admirable book does make out an impressive case.

A Practical Method of Self-Analysis. By E. Pickworth Farrow. London: George Allen and Unwin, Ltd. 1942. Pp. xv+153. 6*s.* net.

The author of this book has presented us with an interesting—not to say entertaining—piece of autobiography. It begins with a description of his treatment by two psychoanalysts successively. There is much to be said for the patient, as well as the analyst, giving *his* account of an analysis; though it would hardly be fair to pass judgment on psychoanalysis and psychoanalysts on the strength of the two examples described by the author. It is not surprising that their treatment was not successful, and that he was driven to adopt some other method of analysis. But it cannot be too strongly emphasized that only a man of some courage, strength of mind and perseverance, coupled with considerable insight and scientific judgment, could utilize successfully the method of self-analysis described here, and derive from it the therapeutic results obtained by the author. True, it appeared to avoid the dangers of obsessive rumination which may result from the introspective methods often employed. The author wrote down everything which came into his mind during a given period of time, repeated at regular intervals, and did not seek to interpret it until afterwards. Abreaction proceeded naturally, and the accompanying anxiety disappeared in due course. But it seems improbable that anyone whose anxieties were very strong and deeply rooted would be able to produce or interpret the repressed material associated with those anxieties. He would lack, not only the reassurance given by the transference, but also the specific object upon which to project his infantile loves and hates. Some colour is given to this view by the author's statement that he never found any evidence of frustration of infantile love feelings towards adults.

This constitutes an interesting piece of research work, but one which cannot be recommended for repetition by any but a very few. Such seems to be the meaning of the Foreword by Prof. Freud.

What Price Alcohol? By Robert S. Carroll. New York: The Macmillan Co. (London: Macmillan and Co.) 1941. Pp. xv+362. 12*s.* 6*d.* net.

In this book the case against alcohol is stated at length, with abundant illustration, with clear and authoritative statement of the scientific evidence, physiological, biochemical, psychological and social, and sometimes with no little emotion. There are three sections. The first, entitled *Why Alcohol?*, presents a somewhat detailed picture of the varied motives or stimuli which may drive or attract individuals to alcohol and lead to addiction. The second, called *What Price Alcohol?*, is concerned with a classification of the main types of alcohol addiction, and a very valuable exposition of how, if at all, they can be successfully treated. The third, named *Alcohol or Man*, raises very wide questions of the character and structure of the well-balanced life, and sees alcohol as one of many agencies, often operating in an intricately interlacing manner, which may destroy such a balance. "Dr Robert S. Carroll", says Adolf Meyer, in an excellently judicial introduction to the work, "has for years proved his hospital one of the most effective systematic agencies in the treatment of victims of alcohol, along lines that are also his methods and principles in the treatment of the rank and file of mental disorders."

In spite of the fact that it is over long and sometimes rather irritatingly written, Dr Carroll's book deserves wide attention as a serious and genuine contribution to a series of problems which are almost always in part psychological in origin and development. It would be a very good thing if section 2, which deals with fundamental physiological, biochemical and psychological questions, and in a most admirable way with the treatment of victims of the drug, could be separately published. In this shorter form the book would be almost certain to be read widely and used with success by doctors, psychologists and others who may often have to try to deal with cases that occur, with very little effective guidance.